# The Mining Industry in China

February 2001

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February 2001

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and the
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Canada

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# THE MINING INDUSTRY IN CHINA

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## EXECUTIVE SUMMARY

The Chinese metals, minerals and mining equipment markets are some of the largest in the world in terms of production, consumption and potential for growth. These markets are currently characterized by rapid change, both in commercial terms and, significantly, with respect to their regulatory and administrative environments. New legislation which improves investment conditions, coupled with an ongoing initiative to de-link Chinese mining enterprises from direct government control, should breath new life into an industry which remains characterized as inefficient, non-transparent and prohibitive for foreign investors.

The ongoing government reform process has resulted in growing efforts to tackle systemic problems of inefficient resource development, environmental degradation, questionable business practices, and untapped economic potential. The positive contribution that foreign expertise and capital can make in rapidly addressing these challenges has been identified as part of this relatively new government initiative. Nevertheless, foreign mining companies still face a series of hurdles in trying to operate in China, including ambiguous and unpredictable regulations and procedures.

Specific opportunities for Canadian companies exist in the following areas:

- the provision of mining equipment, particularly advanced high-quality equipment and vehicles for underground and open-pit mines;
- the provision of equipment, procedures and management training for mine safety;
- mining prospecting joint venture or wholly-owned foreign enterprise (WOFE) opportunities — especially as exploration intensifies in the more remote and under-explored areas of China's western and central regions; and
- mining investment, in order to take advantage of the greater opening up of the market and more favourable policies announced by Chinese authorities.

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# THE MINING INDUSTRY IN CHINA

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## MARKET OVERVIEW

China's mining industry occupies a decisive position in China's economy. In 1999, China's mining industry accounted for 6% of the national industrial output and employed more than 20 million people. In addition, the industry provided 95% of China's energy and 80% of the raw materials needed for its economic and social development.

China is one of the few countries in the world with relatively abundant mineral resources of all types. It has proven reserves of 154 minerals, including 54 metals and 90 non-metals. Twenty of its verified mineral deposits are the largest in the world (e.g. titanium, tungsten, antimony, rare earths and tantalum) and the nation ranks second in the world in deposits of alumina, coal, tin, molybdenum, niobium, silver and lithium. Globally, China is the largest producer and consumer of coal, steel and tin, one of the largest producers of gold (fifth largest in 1999) and is the second-largest producer of non-ferrous metals. In addition, China became the world's largest zinc producer in 1999 and has been known to be the world's largest lead producer for several years. The nation is a net exporter of a large number of minerals including molybdenum, tungsten, zinc and rare earths. **Table 1** outlines China's metals and mineral production in 1997. Refer to **Appendix A** for information on China's mining output in 1998 and 1999.

**Table 1. China's Mining Industry, 1997**

| | No. of mines | Workers | Ore output (million tonne) | Value ($ million) |
|---|---|---|---|---|
| Aluminum | 1 024 | 34 514 | 6.50 | 51.17 |
| Antimony | 2 093 | 70 843 | 1.79 | 257.80 |
| Asbestos | 183 | 25 846 | 8.30 | 83.49 |
| Coal | 75 761 | 6 348 143 | 1 116.94 | 16 559.96 |
| Copper | 2 003 | 216 173 | 52.58 | 1 006.97 |
| Gold | 3 677 | 339 581 | 112.04 | 1 643.27 |
| Graphite | 287 | 22 725 | 3.34 | 72.32 |
| Iron | 8 523 | 561 886 | 212.07 | 2 132.81 |
| Lead/zinc | 3 323 | 185 582 | 15.30 | 796.87 |

| | No. of mines | Workers | Ore output (million tonne) | Value ($ million) |
|---|---|---|---|---|
| Limestone | 8 645 | 520 443 | 290.99 | 3 162.15 |
| Manganese | 1 518 | 104 084 | 4.54 | 209.13 |
| Mercury | 58 | 7 693 | 0.33 | 6.71 |
| Molybdenum | 187 | 33 180 | 12.10 | 259.93 |
| Nickel | 15 | 13 918 | 3.08 | 99.51 |
| Phosphate | 896 | 106 700 | 23.26 | 245.77 |
| Salt | 180 | 44 027 | 14.24 | 332.77 |
| Sulphur | 2 255 | 122 518 | 20.93 | 303.69 |
| Tin | 1 055 | 84 610 | 10.91 | 199.23 |
| Tungsten | 758 | 72 767 | 6.14 | 136.34 |
| **Total** | **112 441** | **8 915 233** | **1 915.38** | **27 559.89** |

Source: *Youse Jinshu Nianjian* (Non-ferrous Metals Yearbook) 1997, 1998, *Dizhi Kuangchan Nianjian* (Geology and Minerals Yearbook) 1998.

There are over 155 000 mining enterprises in China. Non-state enterprises, such as collectively-owned or private mining enterprises, individual miners, or mining enterprises with foreign investment, account for approximately 38% of total mineral production and 61% of mine employment. China's mines include:

- metallurgical mines — China has 14 large scale open pit iron ore mines with an annual production of 3 million tonnes and six underground iron ore mines with an annual production capacity of 1 million tonnes. In 1999, China produced 215 million tonnes of iron ore.

- nonferrous and precious metals mines — thirty of China's nonferrous mines have 15-year effective reserves. The combined mining and mineral dressing capacity of all China's nonferrous mines is currently at a level of 84 million tonnes per year. In 1999, the output of China's ten major nonferrous metals exceeded 5 million tonnes. China has approximately 1200 gold mines, 20 of which are judged to be large. These mines produced 180 tonnes of gold in 1999.[1] Please refer to **Appendix B** and **Appendix C** for more information on China's non-ferrous metals production.

[1]For detailed information on China's gold market please refer to *The Gold Mining Market in China*, which was prepared by the Department of Foreign Affairs and International Trade's (DFAIT) Market Research Centre in co-operation with the Trade Commissioner Service. The report can be accessed electronically at DFAIT's website, InfoExport (http://infoexport.gc.ca), or via DFAIT's FaxLink Domestic Service (613-944-4500).

- chemical mines — there are now more than 20 chemical minerals mined in China including phosphorous, sulphur, sylvite, boron, mirabilite, industrial soda and electric limestone, nitratine, rutile, natural soda, alunite, arsenic, serpentine and heavy spar. China's chemical mines have a production capacity of approximately 18 million tonnes of phosphorous and 15 million tonnes of sulphur. China's production level of sylvite, boron and alunite has reached a considerable level as well.

Although China has impressive mineral reserves and a huge production capacity, the Chinese mining industry suffers from:

- a lack of efficiency — its recovery rate averages about 50%, significantly lower than the western world average of nearly 90%;
- a proliferation of uneconomic mines — this factor has led to a situation in which there is an oversupply of some minerals and shortage of others; and
- extensive environmental degradation and safety problems.

To a large extent, these production, economic, environmental and safety problems are attributable to the plethora of small-scale, inefficient mines, many of which are illegally and improperly operated. These small mines surfaced following the decentralization of China's mining sector. Today, small scale-mines which are owned by townships or individuals, produce more than 40% of the physical output of several major minerals and account for a significant proportion of employment and revenue (**Table 2**).

**Table 2. Output Share of Small-scale Mines, 1997 (percentage)**

| | No. of Mines | Workers | Ore output | Output value |
|---|---|---|---|---|
| Aluminum | 96.88 | 68.45 | 75.63 | 58.06 |
| Antimony | 98.66 | 77.07 | 46.44 | 35.88 |
| Asbestos | 82.51 | 27.87 | 7.37 | 29.58 |
| Coal | 96.02 | 42.47 | 42.58 | 29.31 |
| Copper | 94.56 | 25.38 | 9.08 | 11.10 |
| Gold | 86.70 | 45.78 | 19.40 | 22.70 |
| Graphite | 90.94 | 28.87 | 34.04 | 16.62 |
| Iron | 96.52 | 46.22 | 32.13 | 22.08 |
| Lead/zinc | 96.45 | 45.17 | 31.13 | 25.20 |
| Limestone | 87.03 | 47.79 | 55.43 | 12.15 |

| | No. of Mines | Workers | Ore output | Output value |
|---|---|---|---|---|
| Manganese | 96.18 | 71.26 | 65.77 | 33.76 |
| Mercury | 86.21 | 9.59 | 8.52 | 6.67 |
| Molybdenum | 94.12 | 34.25 | 15.46 | 15.62 |
| Nickel | 53.33 | 1.83 | 0.59 | 0.06 |
| Phosphate | 88.17 | 42.31 | 51.03 | 31.09 |
| Salt | 40.56 | 7.24 | 10.36 | 4.37 |
| Sulphur | 95.21 | 52.01 | 53.93 | 33.34 |
| Tin | 96.49 | 37.71 | 44.48 | 51.13 |
| Tungsten | 88.52 | 35.18 | 35.31 | 26.80 |

Source: *Youse Jinshu Nianjian* (Non-ferrous Metals Yearbook) 1997, 1998, *Dizhi Kuangchan Nianjian* (Geology and Minerals Yearbook) 1998.

Realizing that the potential of its mining industry is being under-utilized, China's government has increased efforts to tackle systemic problems of inefficient resource development, poor environmental records, questionable business practices, and untapped economic potential. In 1999, for example, China's central government:

- closed a large number of small-sized and inefficient enterprises, including mines and screening and smelting factories — it closed nearly 26 000 coal mines, primarily small-scale or illegal operations, reducing coal output by nearly 250 million tonnes;

- limited the output of coal and most non-ferrous metals, rare earth metals, steel, and a few other minerals for the duration of 1999 and 2000 — steel enterprises are not allowed to produce more than 110 million tonnes of steel products in 2000;

- banned new mining projects until the end of 2000 for eight minerals (coal, tungsten, tin, antimony, rare earth, fluorite, molybdenum and barite) by suspending the issuance of mining permits — China had already banned the construction of iron and steel plants in October 1998; and

- began to encourage increased mechanization.

*Imports of Metals and Minerals*

Despite its abundant resources, China's per-capita mineral endowment is below the world average. Hence, China must import a substantial amount of the minerals and metals it needs to drive its booming economy.

In 1999, China imported $46 billion worth of metals, minerals and mineral fuel, including alumina, asbestos, chromite, cobalt, copper, iron, manganese, oil, phosphorous, potash, potassium, steel and sulphur. Imports of steel, iron and copper made up the bulk of China's metal and mineral imports. These iron and steel imports are necessary because China's iron ore deposits are mostly low grade, averaging less than 35% iron. Please refer to **Appendix D** for more information on China's mineral import market.

China's mineral imports are expected to grow in the future. Indeed, Chinese experts estimate that of the 45 key minerals with proven reserves in China, only about half will remain in sufficient quantities by 2010.

*Mining Equipment Market*

In terms of production, consumption and potential for growth, the Chinese mining equipment market is one of the largest in the world. China's mining equipment market was worth approximately $11.25 billion in 1999, up 20% from $9.35 billion in 1998. Imports accounted for 20% of these figures and totalled $2.25 billion in 1999 and $1.87 billion in 1998. Key imports included:

- Machinery for sorting, screening earth, stone — HS 847480;
- Continuous-action elevators/conveyors — HS 842839;
- Heat exchange units — HS 841950;
- Instruments and appliances for surveying — HS 901580;
- Mixing/kneading/crushing/grinding/screening machines — 847982;
- Machinery for filtering or purifying — HS 842129;
- Dryers — HS 841939;
- Machinery with a 360 degree revolving superstructure — HS 842952;
- Continuous-action elevators/conveyors/belt type — HS 842833;
- Parts of machinery, plant and equipment — HS 841990;
- Crushing or grinding machines — HS 847420;
- Machinery for lifting, handling, loading — HS 842890;
- Machines for mixing mineral substances with bitumen — HS 847432;
- Centrifuges, including centrifugal dryers — HS 842119; and
- Industrial or laboratory furnaces and ovens — HS 841780.

See **Appendix E** for more details on China's mining equipment import market.

It is estimated that 70% of all the mining equipment imported by China is for its coal industry. Much of the remainder is for China's nonferrous metals industry and for gold exploration.

As a result of efforts to phase out outdated technology and equipment, and increase the efficiency, environmental sustainability and safety of its mining techniques, China's mining equipment market is expected to stay strong in 2001 and beyond.

*Investment Trends*

Although China is now the world's second largest recipient of foreign direct investment (FDI) inflows, the amount invested in the mining sector thus far has been relatively insignificant. In 1997, only about $1.3 billion of the $62 billion invested in China by foreign firms was directed into China's mining and quarrying industry.[2]

The majority of foreign investment in China's mining industry has been used to boost the production of iron and steel, aluminum, lead and coal. Other commodities which have attracted overseas investment include construction stone (Hong Kong), copper (Finland, Japan, United Kingdom), fertilizers (South Korea), gold (Canada, United States), titanium (United States, Japan, Malaysia) and zinc (Australia). The section below titled, ***Actual and Planned Projects***, describes numerous projects involving foreign investors in China.

Although the Central Government publicly encourages foreign investment in the Chinese mining industry, no major mines have been established involving foreign investors to this date. Indeed, in 1997, foreign invested enterprises accounted for only 0.9% of the enterprises involved in China's mining and quarrying sector (**Table 3**). The problem stems largely from the fact that the support for FDI expressed by lower level mining sector officials does not appear to be matched by direction or support by more senior officials.

**Table 3. China's Mining and Quarrying Sector, 1997**

| | Chinese Enterprises | Foreign Invested Enterprises |
|---|---|---|
| Number of Enterprises | 29 098 | 288 (0.9%) |
| Gross industrial output value ($ billion) | 78.3 | 3.0 (3.8%) |
| Total pre-tax profits ($ billion) | 11.7 | 0.7 (5.7%) |

Source: *Statistical Yearbook of China 1998* , pp. 444-457

Nevertheless, the rationalization and modernization of China's mining industry will require a significant injection of capital. Unable to fund this effort on its own, the Chinese government has identified foreign investment as an integral part of the modernization of the Chinese mining industry, and is encouraging foreign direct investment (FDI) in the mining sector more fervently than it ever has in the past. Government officials believe that FDI will:

[2]In this context mining and quarrying refers to coal mining and dressing, nonferrous metals mining and dressing, nonmetal minerals mining and dressing, other minerals mining and dressing, and logging and transport of wood and bamboo.

- stimulate mining and new mine development;
- raise the intensity and scope of market competition in all aspects of operations in the sector;
- stimulate privatization and better capital inflows to further boost economic development;
- stimulate aggregate demand;
- increase the number of skilled workers in China
- help to establish a more stable environment for growth, rationalization and modernization in the sector;
- help China meet the challenges of the rationalization of the global mining industry;
- increase China's competitiveness as it enters the World Trade Organization (WTO);
- allow China to improve its performance both in terms of exports and imports without resorting to protectionist policies; and
- provide revenues through taxes.

**Government Measures Shaping Market Growth**

In 1998, China's central government launched a major initiative to reorganize its mining sector. The initiative involved the creation of the Ministry of Land and Resources (MLR) and the restructuring of all mining related government departments. It also involved an effort to "corporatise" Chinese mining enterprises by separating them from central government control. To date, most of the Central Government's mineral and metal industry holdings have been dissolved and their responsibilities have been transferred to provincial and local government control — China's gold mining industry remains under the control of the Gold Bureau (see **Government Organizations** for more details). Most recently, the newly established Central Government's non-ferrous metals industry holdings — the China Copper Lead Zinc Corp. (CCLZ), the China Aluminium Corp. (Chalco), and the China Rare Metals & Rare Earth Group Corp. (CRRC) — were dissolved in July 2000. The corporatisation process should be completed by 2001. For additional information please refer to **Government Organizations**.

China's efforts to corporatise its mining sector have been facilitated by a monumental amendment to China's Mineral Resources Law — China's national legislation governing

the mineral industry — which came into force on January 1, 1997. Although the amendment strengthened state-ownership of China's mineral resources it also extended the responsibility of local governments in exploration and exploitation of mineral resources. As a result, local levels of government have been given greater autonomy in terms of project approvals and are now permitted to transfer mining rights and to lease and/or offer these rights as security.

In addition to the initiatives outlined above, China has also been improving its legal system and investment regime in order to retain and attract foreign mining companies. The most significant change has been the implementation of the Exploration Registration Regulations, Mining Registration Regulations and the Transfer Registration Regulations, which all came into effect on January 12, 1998. Other significant changes include:

- the February 1998 issuance of three new regulations pertaining to the Mineral Resources Law that establish a system of acquiring mineral rights with compensation and specifying foreign investors' legal position;

- the 1999 issuance of the Land Administration Law of China which improves conditions related to the utilization of land for mining purposes with foreign investments; and

- the February 2000 issuance of the Notice on the Problems in the Application of Foreign Subsidiaries for Prospecting Rights, which allows foreign subsidiaries to win prospecting rights directly, rather than through a local joint venture partner.

In February 2000, the MLR announced measures which allow foreign funds to play a larger role in the prospecting and mining of metals and minerals in China, by:

- waiving mineral development compensation fees if foreign investors explore for minerals China is unable to explore for on its own;

- allowing foreign investors to become shareholders in China's state-owned medium or large-scale mining enterprises;

- allowing foreign investors to purchase prospecting rights from China's state-owned medium or large-enterprises; and

- simplifying the procedures for approving mineral resource development by foreign investors.

In addition to the above, China has experimented with transferring the right to review, approve, register and issue licences for partially foreign-owned companies investing in the mining sector to provincial governments (licences for petroleum, natural gas and

radioactive materials still require MLR approval). The province of Yunnan was the first province granted this right. Following the delegation, Yunnan:

- streamlined its approval process for mining activities;
- opened all mines regardless of size, to foreign investment — except for those mines dealing with minerals forbidden for foreign investment by the Central Government;
- allowed the creation of wholly owned foreign enterprises (WOFE), joint ventures, cooperative enterprises, and similar Sino-foreign arrangements;
- allowed the creation of incorporated and unincorporated corporations;
- gave foreign investors mining rights over the mineral resources in which they invest and explore (pursuant to the necessary registration process);
- allowed foreign investors to depreciate the expenses they incur in the prospecting stage (as deferred assets through an accelerated method of depreciation);
- granted a 50% reduction of the mineral resources compensation fees for foreign invested mining operations that recover associated minerals;
- allowed foreign investors to refuse to share the costs of road construction;
- granted foreign investors corporate income tax exemptions for two years and a tax reduction of 50% for three years;
- gave foreign investors priority in land-use planning; and
- made basic geological data available to foreign investors.

To date, the experiment has worked well, licenses are being issued quickly and efficiently. As a result, the MLR is expected to extend many of the policies undertaken by Yunnan nationally.

The principal policy initiated by the Yunnan government which will be emulated nationally is the opening of exploration rights to foreign investors. According to highlights from an intra-departmental paper entitled: Several Suggestions for Further Encouraging for Foreign Investors to Invest in the Exploration and Development of Non-

oil-and-gas Mineral Resources, which were released in October 2000, China will pursue the following measures in order to further open exploration rights to foreign investors:[3]

- Foreign companies will be allowed to establish wholly foreign-owned enterprises, work together with Chinese unincorporated bodies to carry out venture explorations and/or undertake joint prospecting activities with Chinese citizens who own exploration rights in a form of "non-legal person" cooperation;

- Foreign companies and their agencies and/or representative offices, will be allowed to carry out exploration activities either as a sole investor or in co-operation with a Chinese partner;

- Foreign companies will be allowed to explore and develop non-oil-and-gas minerals by buying shares in Chinese exploration companies with advanced technology or equipment, or by purchasing exploration and mining rights for non-oil-and-gas minerals from large and medium Chinese enterprises;

- Foreign companies' investment and prospecting rights will be protected and they will be allowed to transfer the exploration and mining rights they acquire;

- Foreign investors involved in risk exploration will be legally entitled to the mining rights on any lucrative non-oil-or-gas minerals found in the exploration area;

- Preferential policies, such as tax incentives in accordance with current regulations over foreign-funded enterprises and foreign enterprises, will be offered;[4] and

- Cooperation between foreign companies and Chinese large and medium sized state-owned mining enterprises will be encouraged.

The full text of the new policies will be available on the MLR's website (**http://www.mlr.gov.cn**) at the beginning of the new year.

The further opening of China's western and southwestern regions is part of the Western Development Strategy and will be a key element of the 10th Five Year Plan (2001-2005). These regions have large concentrations of high-grade lead, zinc and bauxite,

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[3]The highlights were discussed at the Foreign Investment Conference on the Development of the Mining Industry in Western China (in Urumqi, Xinjiang Autonomous Region) in October 2000. The full document will be released officially during a press conference involving the State Council on December 14.

[4]For example, foreign investors in solid ore development are allowed to incorporate exploration expenditures into deferred assets and have them written off at the exploration stage.

as well as promising hydroelectric power potential. According to China, the estimated value of mineral reserves (for the 45 major minerals) in the western region represents roughly 50% of the national total. More specifically, China claims that the western region contains 39% of the country's coal, 99% of its chromite, 52% of its iron, more than 60% of its copper, 37% of its aluminum, 66% of its lead and zinc, 89% of its nickel, 92% of its platinum, 99% of its potash, and 70% of its phosphorous.[5] However, the western region's mining output accounts for only 20% of the national total, according to Chinese government statistics.

The Chinese government has issued a number of incentives to encourage foreign investment in the western region. Specifically:

- the import of facilities and related technologies, fittings and spare parts for projects specified in the *Catalogue for the Guidance of Foreign Investment Industries* (occurring in the western region), are exempt from the import duties and taxes according to relevant regulations; and

- as of Jan. 1st, 2000, foreign invested enterprises that are "state encouraged" and are located in the western region, will be granted a three year tax holiday followed by a reduced Corporate Income Tax of 15%.

Despite the changes to China's investment regime, Gold is still on the list of Class B restricted categories of the Catalogue for Foreign Investments in China; therefore, the possibility for investing in China's gold mining sector is limited. Officially, the limitations placed on the properties available to foreigners for exploration are still in effect. However, foreign companies can now propose gold projects in areas of exploration that are not on the project list proposed by the Chinese authorities. Each case is reviewed on its individual merits.

Following the liberalization of China's silver market earlier this year, China is considering liberalizing its gold market and may establish a national gold exchange during 2000 or 2001. The exchange would allow commercial banks to be involved in gold transactions. In August 2000, China took a step toward deregulation of the gold industry when it set up China's first share-holding gold company, Zhongjin Gold Co. The company is 88% owned by the China National Gold Corp. (CNGC). The rest is held by a unit of the China International Trust and Investment Co. and five other firms (all of which are domestic). If China does liberalize its gold market, gold will likely be removed from the list of Class B restricted categories of the Catalogue for Foreign Investments in China.

[5]These estimates are likely based on potential value for proven reserves.

## Opportunities

*Mining Equipment and Services*

Enhanced rationalization and competition in the Chinese mining sector, tougher environmental requirements and a desire to increase the amount of metals and minerals refined in China, are creating opportunities for Canadian technology, equipment and services firms in several niche areas. These include:

- tailing management;
- site rehabilitation;
- smelter technology and products;
- safe production and disposal of minerals and metals;
- high technology computer applications;
- global positioning systems (GPS);
- advanced drilling technology;
- energy-efficiency applications;
- greenhouse gas emission controls; and, in general,
- productivity enhancement and applications to extend the service life of materials and products.

*Metals and Minerals Import Market*

China currently is experiencing a shortage of copper, which will not be alleviated by the Xinjiang discovery (East Tianshan Copper Mine). This shortage is expected to continue for several years, creating clear opportunities for the Canadian copper mining industry.

*Investment*

China is slowly shedding its status as a very high-risk mining investment destination. The reforms mentioned in the previous section, **Government Measures Shaping Market Growth**, are beginning to make China a more attractive investment destination for Canadian mining exploration and operating companies.

China is seeking foreign assistance for activities such as geological exploration and drilling, the modernization and construction of nonferrous smelters and refineries, environmental reclamation and management training. In general, the primary areas in which China is seeking foreign investment include:

- nonferrous smelters and refineries, principally for copper, tin, tungsten, aluminum, lead, zinc, steel and nickel;

- specialized mining and processing software and excavation techniques;

- geological mapping and mineral exploration technologies;
- the modernization of iron and steel plants;
- clean coal technology;
- new and used mining and drilling machinery;
- pollution monitoring and controlling devices;
- development of mineral sands for export;
- engineering, computer and consultant services; and
- physical infrastructure, transportation and telecommunications.

In particular, China is seeking foreign investment in the following areas of its metallurgical sector:

- steel making with super high power furnaces of 50 tonnes and above (equipped with external smelting and continuous casting capacities) and converter furnaces of 50 tonnes and more;
- smelting of stainless steel;
- production of cold-rolled silicon steel sheets;
- production of hot- and cold-rolled stainless steel plates;
- steel pipes for transporting petroleum;
- processing and treatment of scrap steel;
- mining and dressing of iron and manganese ores;
- production of directly reducted iron and retailored iron;
- mining of high alumina vitriol earth and hard clay ores, and production of clinker;
- deep processing of needle coke, tamped coke and coal tar; and
- production of dry coke quenching.

In addition, the Chinese government is encouraging investment of up to 100% foreign ownership in the following areas of the nation's nonferrous sector:

- production of mono-crystal silicon (20 cm and above in diameter) and multi-crystal silicon;
- production of hard alloys, tin compounds and antimony compounds;
- production of nonferrous metal composite materials and new alloy materials;
- rare-earth applications
- mining copper, lead and tin ores; and
- mining of aluminum ores and production of alumina with an annual capacity of 300,000 tonnes or more.[6]

However, foreign investment is restricted in the following sectors of China's nonferrous metals industry:

- copper and aluminum processing;
- mining, dressing, smelting and processing of precious metals (gold, silver, and platinum group metals);
- mining of such nonferrous metals as tungsten, tin and antimony; and
- exploration, mining, dressing, smelting and separation of rare-earth.

***Actual and Planned Projects***[7]

There are numerous mining related projects involving foreign investors planned or underway in China. A selection of these projects is detailed below.

Aluminum

- In April 2000, the China Aluminium Industry Group, France's Pechiney S.A. and the Southwest China Aluminium Processing Plant signed a memorandum to

[6]Canadian companies should note that wholly foreign-owned operations are not permitted for mining of copper, lead and tin ores, or for mining of aluminum ores.

[7]Information contained within ***Actual and Planned Projects*** was sourced to a large extent from information appearing in the February 1999 issue of *Mining Engineering*. However, various company press releases and news reports were used as well.

establish a $485 million joint venture. Pechiney will be the largest shareholder of the venture which will manufacture high-quality sheets and plates. The facility will supply 40 000 tonnes of hot-rolled rolls and thick plate hot rolling processing service to the Southwest China Aluminium Processing Plant.

- In March 2000, China's first joint venture to produce aluminum alloy, the Corus (Tianjin) Aluminium Profiltechnik Co. Ltd., was set up in Tianjin. The joint venture involves the Corus Aluminium Profiltechnik Co. of the U.K. (61%) and the Tianjin Non-Ferrous Metal Group. The plant aims to have a production capacity of between 8000 and 10 000 tonnes of large section aluminum alloy annually. Corus invested $42.4 million in the venture.

- In November 1999, the Aluminium Co. of the United States signed a 30 year contract with the China National Nonferrous Metals Industry Corp. (Beijing) to supply 400 kilo-tonnes per annum (kt/a), or 440,000 short tonnes per year (stpy), of aluminum. The agreement requires the Aluminium Co. to invest a total of $330 million in the venture.

- In September 1998, Canada's Alcan Aluminum signed a memorandum of understanding (MOU) with the State Nonferrous Metals Industry Administration (SNMIA) to undertake a detailed feasibility study (DFS) regarding the establishment of a smelter and power plant in Heijing City, Shanxi Province. The project is waiting for further approval before moving forward.

- In July 1995, Kaiser Aluminium & Chemical Corp. (a subsidiary of Maxxam Inc. of the United States) and the China National Nonferrous Metals Industry Corp. (Beijing) established the Yellow River Aluminum Industry Co. joint venture to smelt aluminum in Gansu Province. Kaiser invested $82.3 million and controls 49% of the venture.

- In January 1992, the Link Hing Metal Co. of Hong Kong established the Asian Aluminium Factory joint venture in Guangdong province. With its partner Nanhai Dali Urban Economic Development Co., Link Hing metal will produce 12 kt/a (13 200 stpy).

- In August 1990, Canada's Alcan Aluminium Ltd. and the Japanese Light Metal Corp. established the Huajia Aluminium Materials Co. Ltd. in Shenzhen. The company was formed in partnership with the China National Nonferrous Metals Industry Corp., the Southwest Aluminium Processing Factory and the Guizhou Aluminium Factory. The facility is already producing aluminum products. Together, the Canadian and Japanese companies invested $30 million and hold 45% of the venture.

Carbon

- Early in 2000, Norway-based Elkem ASA acquired a 27% stake in a state-owned carbon factory in the city of Shizuishan. The 14 year old factory currently has an installed production capacity of 25 000 tonnes/year (t/y). Elkem plans to increase the facilities production capacity to 30 000 t/y.

Coal

- In July 1995, China Strategic Holdings of Hong Kong and MRI Co. of Australia, formed a joint venture to upgrade China's major coal mines. The two companies jointly invested $275 million in the project.

- In February 1995, Custom Coals Co. of the United States and MRI Co. of Australia established a joint venture with the China Coal Construction & Development Corp., to lay 800 km of underground pipeline between Shannxi and Shandong provinces. A coal washery and port facility are also being constructed through the joint venture. Custom Coals and MRI invested $1.22 billion in the project and hold 51% of it combined.

- In January 1990, Japan's Nissho Iwai Corp. and JGC Corp. established a joint venture with Yanzhou Coal Mine Administration to produce coal and water mixtures. The Japanese companies invested $34 million in the project and hold 49% of the joint venture company.

Copper/Lead/Zinc

- Minco Mining & Metals Corporation of Vancouver is currently conducting a pre-feasibility study for a copper mining project in Sichuan province. The Xifanping Project involves 48 $km^2$ of porphyry copper property.

- In May 2000, Philippine's Atlas Consolidated Mining & Development Corp. (Atlas) signed a preliminary working agreement with the Non-Ferrous Metals Industry's Engineering and Construction Co. (CNFC). The agreement covers efforts to secure financing for the rehabilitation of Atlas's facility in Cebu. The Toledo copper mine, as the facility is known, was Asia's largest copper mine until it closed as a result of flooding in 1994. An investment of $110 million is required to bring the mine back into commercial operation, 64% of this amount will come from foreign investors (namely Atlas).

- U.K.-based Billiton Plc's wholly owned subsidiary, Billiton China Bv, recently formed an incorporated contractual joint venture (ICJV) with the LanPing Nonferrous Metals Co. (LNMC — LNMC is 51% owned by the Yunnan Metallurgy Group, which in turn is wholly owned by the Yunnan provincial

government) to develop the LanPing zinc deposit in western Yunnan Province. Billiton holds 65% of the ICJV which will develop what is reported to be one of the world's largest undeveloped resources, capable of sustaining a production rate of 250K-mt/yr of zinc. The ICJV is currently conducting a pre-feasibility study at a cost of $5.9 million. If it proves positive, a full feasibility study could be complete as early as year-end 2001. Billiton's preliminary investment will be $733 million.

- General Minerals Corp. (GMC) of Canada and the Sichuan Nonferrous Metals Ore Resource Exploration Development Co. established an exploration joint venture agreement covering a copper and gold property in central China. GMC will evaluate the 10 $km^2$ Huang Shui Gou property in Sichuan which has estimated resources of 760 kt (837,700 st) of grading 2% copper and 6g/t gold.

- In early 1998, Naneco Minerals Ltd. of Canada established a joint venture with the Hulunbeir Non-Ferrous Metals Corp. to operate a Jiawula polymetallic mine located in the Hulunbeir League, Inner Mongolia. Hulunbeir Jiawula Non-Ferrous Metals Co. Ltd., as the joint venture company is named, is conducting a feasability study at this time. Production could start late in 2001.

- In December 1996, Finland Outokumpu Copper Tube Co. Ltd. established a joint venture named the Outokumpu Copper Tube (Zhongshan) Co. Ltd. Outokumpu invested $510 million in the facility which manufactures screwed copper tubes.

- Minco and Teck Corp. of Canada have established a joint venture with the Baiyin Nonferrous Metals Co. which is known as the Gansu Keyin Mining Co. The joint venture is exploring the down-dip extensions of an existing base metal mine in the Baiyin region.

- In October 1995, Japan's Sumitomo Metal Mining Co. and Itochu Corp., and Hong Kong's Sharpline International established the Jinlong Copper joint venture in Tongling with the Tongling Non-Ferrous Co. Combined, the Japanese and Hong Kong companies invested $274 million in the joint venture and hold 35% and 15% of it, respectively. The venture produces copper and sulphuric acid.

- In January 1993, BHP Minerals Ltd. of Australia, and the Sichuan Nonferrous Metals and Ore Resources Exploration Development Corp. established the Kang Dian Exploration Development. The venture is exploring for zinc in Sichuan Province.

- In 1992, Canada's Noranda sold its continuous smelter technology to the China National Nonferrous Metals Import and Export Corp. (CNIEC) for the expansion and modernization of its Daye copper smelter — the smelter was inaugurated in

October 1997. In 1993, Noranda sold the same technology to CNIEC for its Shenyang smelter project. The Shenyang plant opened in 1998.

Diamonds

- In October 1997, Canadian-based Pan Asia Mining acquired three diamond mines and occurrences in eastern China: the Changma diamond mine, the Xiyu diamond project and the Pingyi-Feixian diamond occurrence. The Changma diamond mine, China's largest producing diamond mine, is an open pit operation which Pan Asia intends to expand. Between 1992 and 1999, the mine's average annual production, was about 45 000 carats. Pan Asia plans to invest $7.4 million into the Xiyu kimber lite occurrences giving it a 50% share of the project. The occurrences are a cluster of seven diamondiferous kimber lite pipes in Shandong province. Finally, Pan Asia has entered a joint venture to explore the Pingyi-Feixian occurrences which cover an area of 1620 $km^2$ in which alluvial diamonds and kimber lite minerals have already been discovered.

- In May 1997, the Netherlands' Astro Mining and Australia's Quantum Resources signed an agreement with the Liaoning Bureau of Geology and Mineral Resources to explore for diamonds in Liaoning Province.

- In March 1997, Canada's Princess Resources Ltd. established a joint venture with the Hunan Xinxiang Geology Mining Co. The joint venture gives Princess exploration rights for three precious metal projects in the South China Fold Belt in Hunan Province. The Canadian company invested $2.8 million in order to establish the joint venture.

- In September 1996, Thailand's Essex International PCL invested $3.6 million in order to establish the Shenyang Panasia Gold and Products joint venture. The joint venture produces gems in Shenyang, Liaoning Province.

- In November 1993, the DeBeers Group of South Africa established a raw diamond processing plant in Shanghai.

- In September 1991, Australia's Argyle Diamonds Corp. opened a diamond cutting and polishing factory 30 km from Beijing.

Fertilizers and Phosphates

- In 1999, Spur Ventures of Canada received final approval to proceed with its Yichang phosphate project. The company is currently conducting a feasibility study for the venture which will involve the construction of a mine, a slurry pipeline and at least three chemical plants. Jacob Engineering Inc. has been commissioned to undertake the feasibility study.

- In 1997, South Korea's Dongbu Group constructed a storage and dryer facility for phosphate ore in cooperation with the Guizhou Kaolin Group Co. Dongbu invested $1.7 million in the facility.

Gold

- Minco Mining & Metals Corporation is involved in a pre-feasibility level project located in Sichuan province aimed at mining gold. The Chapuzi project involves 120 $km^2$ of gold exploration property containing 250 000 ounces of gold.

- In May 2000, Placer Dome of Canada signed an agreement with the provincial office of the China National Non-Ferrous Corp. (CNNC) to acquire the assets and the mining rights of an operational gold mine in Baguamino near Xi'an, Shaanxi Province. Placer Dome intends to invest between $190 and $370 million in order to expand the mine's production capacity to 300 000 ounces of gold per year.

- In 1999, General Minerals Corp. (GMC) of Canada established a joint venture with a Chinese partner to explore the Towerbeck gold prospect in northwestern China. The joint venture is known as Towerbeck Minerals Joint Venture Corp. Ltd. and has already conducted feasibility studies on two zones of surface mineralization known as Alpindi and West Towerbeck. The studies found favourable results. The joint venture company is currently conducting more systematic studies of the area and plans to start drilling and underground tunnelling later this year.

- In 1999, World Wide Minerals Ltd.'s (Canada) subsidiary, Libra Gold Corp., acquired the rights to a 51% joint venture interest in the Dafang Gold Project in Hunnan Province. The project was previously being developed by Princess Resources Ltd. who invested approximately $5.2 million into the project between 1997 and 1998.

- In 1999, Southwestern Gold Corp. and Global-Pacific Minerals of Canada became involved in the Haoya Gold Project which consists of an exceptionally large gold mineralizing system within the Tien Shen Gold Belt in Inner Mongolia. The project consists of two separate joint ventures with the CNNC and with Brigade 217 of the China Nuclear Industry and involves the exploration of 163 000 hectares. The partners estimate an inferred-resource of more than 150 million tonnes averaging 1.2 grams gold per tonne.

- In 1998, WMC of Australia established a joint venture with a Chinese partner to explore a very promising gold deposit in the Talousi area in the Xinjiang Autonomous region. WMC has been drilling at the deposit since 1999. Positive

results are expected in the near future after which a full feasibility study will be undertaken.

- In August 1998, Canada-based Golden Thunder Resources Ltd. acquired an option to earn 60% in the Yunnan Yuntong joint venture. The joint venture has a near-surface, oxidized gold resource of approximately 100 000 ounces which covers two concession blocks totalling approximately 30 $km^2$. The near surface gold resource grades to approximately 4.65 grams/tonne and is open to expansion at depth. The total potential of the property could exceed as much as one million ounces. Gold production began on the project early in 1999.

- In January 1997, Intertraox Inc. of the United States established the Yindun Mineral Resources Development joint venture in Kunming with the China Chengong Yinle Group. The U.S. company invested $1.1 billion in the gold-mining venture.

Iron and Steel

- In October 1996, South Korea's Pohang Iron and Steel Co. established the Jiangsu Shagang POSCO Coated Steel Co. joint venture to produce galvanized steel sheets in Zhangjiagang, Jiangsu Province. Pohang invested $65.5 million in, and holds 90% of, the facility.

- In April 1996, Japan's Mitsubishi Heavy Industries and Mitsubishi Corp. established the Changzhou Baoling Metallurgical Equipment Manufacturing Co. joint venture with the Shanghai Baoshan Iron & Steel Plant and the Changzhou Metallurgical Machinery Plant. The joint venture manufactures steel production equipment in Changzhou, Jiangsu province. The two Japanese corporations hold 33% and 17% of the venture respectively.

- In March 1995, the Australian Overseas Resources and the Boulder Group established a joint venture to manufacture stainless steel products with Guangzhou Iron and Steel. The Australian group invested $83.7 million in the venture.

- In February 1995, Pohang Iron & Steel Co. of South Korea established a joint venture to manufacture galvanized steel plates in northeastern China with the China National Ferrous Metals & Materials Corp. The South Korean company invested $82.3 million in the facility and controls 70% of the venture.

- In February 1995, Marubeni Co. Ltd. and Toyo Steel Bali Co. Ltd. of Japan established a joint venture with the Maanshan Wear Resistance Metal Casting Material Co. (Anhui) to produce steel balls. The Japanese companies invested $12.6 million into the facility and control 60% of the venture.

- In March 1994, Itochu International Corp. of Japan, Tecnicas Reunidas SA of Spain and Demag GmbH of Germany established a continuous steel casting plant in Wuhan. They invested $110 million in the facility.

- In September 1992, South Korea's Pohang Iron & Steel Co. formed a joint venture with the Shanghai No.1 Iron and Steel Plant to produce 120 kt/a (132,200 stpy) of tin plate. Pohang invested $137 million in the facility.

- In September 1990, Germany's Fried, Kropp GmbH established a joint venture with the Talyuan Iron and Steel Co. and CITIC in Talyuan, Shanxi Province to produce steel. The German company invested $540 million and controls 30% of the joint venture.

- In March 1990, Nittetsu Shoji Co. (a subsidiary of Nippon Steel Corp.) and Mitsui and Co. (Japan) established a joint venture with Shum Yip Trading Co. and Nanhai Oil Senzhen Development and Service Corp., to cut steel in the Shenzhen special economic zone. The Japanese companies invested $10 million and control 65% of the venture.

- In January 1990, Mitsubishi Heavy Industries Ltd. and Sumitomo Metal Industries Ltd. (Japan) established a joint venture with the Ministry of Metallurgical Industry to design and engineer continuous steel casting machinery.

Manganese

- In June 1995, Veitsch Radex (a subsidiary of Radex-Heraklith Industriebetelligungs of Austria) established a magnesite mining joint venture with the Liaoning Metallurgical Import & Export Corp. The Austrian company invested $37 million and controls 56% of the venture.

Metallurgy

- In February 1997, Malaysia's Ganz Technologies Bhd made an investment of more than 50% — or $5.9 million — in the Harbin Classic Mines Machinery Corp. in Heilongjiang Province.

- In December 1994, Japan's Kyoritsu Seiki Industry Co. Ltd. and Mitsubishi Corp. established the Shanghai Jingde Foundry Manufacturing Co. Ltd. with the Shanghai Haiguang Smeltery. The venture processes metals and produces weights for forklift trucks. The Japanese companies invested $3.6 million in, and control 60% of, the facility.

Nickel

- In 1994, Inco Ltd. of Canada and the Jinchuan Nonferrous Metals Corp. formed the Jinco Nonferrous Metals Co. Ltd. The nickel salt plant which is located in Kunshan City, 55 km from Shanghai started production in 1997. The nickel salts are used for the electroplating industry and are exported.

Rare Earths

- In May 2000, Inter-Citic Mineral Technologies Inc., of Canada established a joint venture company, Zhonghai Yang Zhong Zhonghai Techmat Ltd. in the city of Yang Zhong, Jiangsu Province. The joint venture company is 80% owned by Inter-Citic and has been producing cerium and lanthanum carbonate, neodymium oxalate and oxide and cerium acetate since it was established. The current throughput rate is 900 tonnes of rare earth chloride feed per year. Throughput is expected to increase to 2500 tonnes per year early in 2001. The joint venture company is developing its own range of rare earth and zirconium coprecipitates.

- In December 1996, Vishay Intertechnology Inc. of the United States and VOI Co. of Israel established a joint venture with the China National Nonferrous Metals Industry Corp. (Nanchang) to produce tantalum capacitors in Nanchang, Hiangxi Province. The U.S. and Israeli companies invested a total of $59.3 million in the venture.

- In July 1994, Canada's AMR Technologies Inc. established a joint venture with Jiangsu Yixing State Owned Rare Earth Factory to process ion absorption clays. AMR invested $98.4 million and controls 77% of the venture. It also owns 80% of a rare-earths production joint venture in Shandong\Zibo.

Silver

- Through its subsidiary, Alaskan Explorations Corp., Vega-Atlantic Corp. established a joint venture with the No. 1 Geological Brigade of the Yunnan Bureau of Geology and Mineral Resources to operate the Luomachang silver mine in Ludian County, Yunnan. Known as the Yunnan Letong Mineral Exploration & Development Co. Ltd., the new joint venture will operate the Luomachang mine which is only three years old. The mine has a processing capacity of 300 tonnes of ore/day and a production rate of 600 000 ounces of metallic silver per year. It has a drill proven reserve of 13 million ounces and an additional 27 million ounce inferred reserve. Vega will invest $6 million in the mine in order to expand production, expand reserves and improve overall silver recovery. Vega hopes to increase output to 1 million ounce/year and will receive an 85% interest in the joint venture company as a result of the investment. Vega

will contribute a further $6 million over a five-year term from its portion of operating profits to repay capital loans already outstanding to Chinese banks.

Tin

- In July 1997, South Korea's Pohang Iron & Steel Co. established a joint venture with the China National Nonferrous Metal Material Corp. to produce 100 kt/a (110,000 stpy) of tin plates for use in food and beverage cans. Pohang invested $80.9 million and controls 90% of the venture.

Titanium

- In July 1990, Japan's Marubeni Corp. and the Malaysia Mining Corp. established a joint venture with the Hainan Provincial Metallurgical Nonferrous Metal Industry Corp. Located in Hainan Province the venture mines titanium-oxide bearing mineral ilanite for export to Japan.

**International Financial Institutions (IFIs)**

China is the largest borrower from both the World Bank and the Asian Development Bank (ADB), representing significant commercial opportunities for Canadian firms. As a result of Canada's status as a shareholder in both institutions, Canadian companies are eligible to supply goods and technical assistance related to loan-funded projects. In 1999, China borrowed $3.1 billion from the World Bank and $1.9 billion from the ADB.

World Bank lending to China has been primarily in three sectors: Agriculture (29%), Transportation (24%) and Energy (19%). ADB funds have been allocated mainly to the following sectors: Transport and Communications (46.1%) and Energy (19.2%). There are also a number of projects focussed on water supply and sanitation. Special emphasis has been placed on projects that support economic reform, develop public infrastructure, address environmental degradation, improve natural resource management, support human resource development and alleviate poverty. Of specific relevance to the mining sector are natural resource management, environmental degradation, and infrastructural development projects.

Companies may supply technical assistance services directly to the banks, in support of project design and feasibility work; however, loan-funded projects themselves are generally managed by Chinese executing agencies. The procurement of loan-funded goods and services by these agencies is subject to lending institution rules governing fairness and transparency, and companies can appeal if they feel that the procurement process is not being properly followed. In both cases, because of the substantial costs in time and travel involved, it is recommended that Canadian companies active in the mining sector evaluate and, where appropriate, pursue opportunities as an element of their business plan for the region.

In October 2000, the World Bank announced that it will be more involved in China's mining sector in the future. The announcement was made at the Foreign Investment Conference on the Development of Mining Industry in Western China which was hosted jointly by the MLR and the World Bank Group. The Bank will help China establish sound investment policies and will make different forms of financing available (e.g., loans, direct participation, and risk mitigations) to sustainable mining projects through the International Finance Corp.

## COMPETITIVE ENVIRONMENT

### Local Capabilities

Chinese domestic manufacturers currently supply about 80% of the needs of China's mining equipment market. China's top ten mining equipment manufacturers are:

- China National Heavy Machinery Corp.;
- China Mining Equipment Manufacturing Co.;
- Northeast China Heavy Mining Machinery Engineering United Corp.;
- Shenyang Mining Machinery Works;
- Xuanhua Mining & Tunnelling Machinery Factory;
- Jianxi Mining Machinery Factory;
- Shanghai Mining Machines Factory;
- Louyang Mining Machinery Plant;
- Qinghai Mining Machinery Plant; and
- Sichuan Mining Machinery Factory.

### International Competition

Together, Japan and the United States supply roughly 40% of China's mining equipment imports. Germany (13.7%), Italy (10.6%), Taiwan (8.9%), the U.K. (4.5%) and South Korea (4%) supply most of the remaining balance (**Table 4**). Japan has led the import market since 1996.

**Table 4: Top 20 Exporters of Mining Equipment to China, 1996 to 1999 ($ millions)**

| | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|
| Japan | 596.84 | 467.33 | 420.78 | 449.87 |
| United States | 359.50 | 363.51 | 332.58 | 444.76 |
| Germany | 414.23 | 311.92 | 285.81 | 309.35 |
| Italy | 290.45 | 161.27 | 139.64 | 238.89 |
| Taiwan | 284.18 | 198.66 | 174.20 | 202.40 |

| | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|
| U.K. | 76.53 | 55.53 | 44.83 | 100.37 |
| South Korea | 170.69 | 148.48 | 139.47 | 87.87 |
| France | 72.26 | 69.89 | 67.27 | 57.17 |
| Switzerland | 29.70 | 18.15 | 19.00 | 52.76 |
| Spain | 8.60 | 7.70 | 11.91 | 50.34 |
| Sweden | 34.90 | 36.43 | 44.16 | 49.50 |
| Denmark | 34.11 | 13.59 | 13.26 | 24.64 |
| Finland | 22.75 | 15.62 | 14.41 | 21.56 |
| Singapore | 35.79 | 19.45 | 18.00 | 21.51 |
| Austria | 9.12 | 11.94 | 13.75 | 20.83 |
| Hong Kong | 51.67 | 30.57 | 19.75 | 15.77 |
| Netherlands | 13.31 | 19.95 | 16.64 | 15.52 |
| Australia | 21.39 | 14.17 | 16.33 | 14.56 |
| Indonesia | 1.78 | 0.78 | 0.59 | 11.39 |
| **Canada** | **11.05** | **16.05** | **16.88** | **10.38** |
| Rest of World | 97.03 | 61.50 | 64.33 | 50.77 |
| **Total (of all countries)** | **2 635.90** | **2 042.46** | **1 873.60** | **2 250.20** |

Note: Refer to **Appendix E** for a list of HS Codes included in these figures.
Source: TradStat, September 2000.

The dominant U.S. mining equipment suppliers involved in the Chinese market include:

- Arco China Ltd.
- Babcock & Wilcox Corp.
- Baker Hughes
- Bechtel Corp.
- Bucyrus-Erie Co.
- Caterpillar Corp.
- HYPAC, Inc.
- Ingersoll-Rand
- Joy Technologies Inc.
- Long-Airedox, Inc.
- Macknally Wellman
- National Drager
- Ramsey Corp.

Other foreign suppliers of mining equipment to China include:

- ABB (Sweden)
- BHP Ltd. (U.K.)
- City Resources Company Ltd. (Hong Kong)
- DBT (Germany)
- Eickhof (Germany)
- ERP (Austria)
- FSW (U.K.)
- Funke, Huster and Co. (Germany)
- Hong Kong Industrial Trading Co. Ltd.
- Kamatsu (Japan)
- Mine Radio (Australia)
- Mitsubishi (Japan)
- Montasa (Australia)
- Murphy Group (Australia)
- NA Co. (Hong Kong)
- NA Co. (France)
- Nyros (Germany)
- Orion Yhtyma Oy Normet (Finland)
- Outokumpu (Finland)
- Pichenay (France)
- Reliance Group (Hong Kong)
- Siemens (Germany)
- Tamrock Co. (Finland)
- USINOR SR (France)

China imports a substantial amount of minerals from throughout the Asia-Pacific region as well as from Europe, Brazil and Morocco. Japan, Taiwan, South Korea, Russia, Ukraine and Kazakhstan were the largest exporters of steel products to China in 1999.

Germany, the United States, Japan, France and Australia have all signed long-term agreements with the Chinese government on scientific and technical exchange and on cooperation in geological exploration.

**Canadian Position**

Canada's reputation as a world leader in mining development and policy, coupled with its positive historic relations with China's government and industry in the mining sector, has positioned Canadian mining companies well to actively participate in China's mining sector reforms. Indeed, Canadian mining companies are increasing their activities in China. They are making area visits, initiating relations with potential partners and regulators, and are gradually making progress in the areas of project development and the establishment of joint ventures.

Canada is the twentieth largest exporter of mining equipment to China. In 1999, Canada exported $10.38 million worth of mining equipment to China, down 38.5% from $16.9 million in 1998. Key exports included:

- Boring or sinking machinery, self-propelled — HS 843041;
- Instruments and appliances for surveying — HS 901580;
- Machinery for lifting, handling, loading — HS 842890;
- Machinery for filtering or purifying — HS 842129;
- Heat exchange units — HS 841950;
- Sorting, screening, separating or washing machines — HS 847410;
- Scrapers — HS 842930;
- Mixing/kneading/crushing/grinding/screening machines — HS 847982;
- Continuous-action elevators/conveyors — HS 842839; and
- Rock drilling/earth boring tools, including parts — HS 820719.

Please refer to **Appendix F** for more information on Canada's mining equipment exports to China.

There are a number of Canadian mining equipment manufacturers active in China. A few of the larger companies include: Shaw-Almex; Conspec RIMtech; Mine Radio Systems; Teledyne Specialty Equipment, the Knelson Group, and Rimex Supply. The involvement of these companies in the market has been greatly enhanced by their willingness to cooperate with Chinese industry. Rimex Supply for example, is now involved in two manufacturing projects in China. In addition to a joint venture named the Zhenjiang Rimex Manufacturing Co. Ltd., which manufactures rims and wheels for large trucks (150, 200 and 300 tonnes) Rimex has established a wholly owned foreign enterprise (WOFE) named the Zhenjiang Aowei Manufacturing Co. Ltd. The WOFE manufactures ring components and parts for wheels for smaller trucks, bulldozers, loaders and for the light construction and forestry sectors.

Another initiative of note is a joint venture between Canadian-based CC Johnson Co. Ltd. (investor in Global Equity Corporation) and Guiyang Mining Machinery Works. Established in 1997, the JV (called Guizhou Jonyang Machinery Industry Co.) is recognized as China's premier manufacturer of wheeled excavators. The JV has a registered capital of $37.3 million, 60% of which was contributed by the Canadian partner. Jonyang is one of Guizhou's model joint ventures.

Numerous Canadian companies have established joint venture mining and exploration operations in China. A number of examples include the following: Alcan Aluminium Ltd. (aluminum); General Minerals Corp. (copper and gold); Pan Asian Mining (diamonds); Princess Resources Ltd. (diamonds); Gold Thunder Resources Ltd. (gold); World Wide Minerals Ltd. (gold through its subsidiary Libra Gold Corp.); Minco Mining & Metals Corp. (gold and non ferrous metals), Advanced Materials Resources Ltd. (rare earths); Spur Ventures (phosphates); Inco (nickel); and Placer Dome (gold).

### *Canadian Investment in China*

According to Statistics Canada, Canadian foreign direct investment (FDI) in China grew appreciably during the 1990s, increasing from $225 million in 1993 to $464 million in 1998. In 1998, China was the seventh-largest recipient of Canadian FDI in Asia.

The Canadian investment community's presence in China is substantial and multifaceted. Canadian investments cover a full range of key sectors, including agriculture, transportation, telecommunications, financial services, energy, mining, biotechnology, construction and forest products. The vast majority of Canadian firms investing in China are SMEs.

Canadian investment in China is concentrated in coastal regions (Shanghai, Guangdong, Shandong, Liaoning and the Beijing/Tianjin area). However, Canadian investments can be found in all regions of the country and are steadily expanding in terms of sectors of involvement.

## Competitive Advantage through Canadian Government and Private-Sector Initiatives

### *Natural Resources Canada and MLR Memorandum of Understanding (MOU)*

Natural Resources Canada (NRCan) and the MLR signed an MOU to increase cooperation between Canada's and China's mining sectors in January 2000. The MOU covers regulatory and taxation issues (including sulphur taxation regulations), encourages the transfer of technology and promotes investment. It also facilitates increased communication between Canada's and China's mining industries through a newly established Canada-China Mining Working Group.

Since 1999, NRCan and Queen's University have been co-sponsoring interns from China's Ministry of Land and Resources.[8] Also, in May 2000, NRCan's minerals and metals sector participated in Queen's Executive Training Program for senior officials from MLR and the provinces. The latter initiative was undertaken following the ministerial trade mission to China in January 2000.

### *Canada China Bilateral Trade Agreement*

On November 26, 1999, Canada and China concluded a bilateral agreement providing for improved market access for a range of goods and services. The bilateral agreement includes provisions to gradually lower tariffs on most mining equipment imports to approximately 10% over a five year period.

[8]Two in 1999 and another two in 2000.

### *Canada China Business Council*

The Canada China Business Council (CCBC) is a private-sector, non-profit membership organization that facilitates and promotes trade and investment between Canada and China. Sixty per cent of the CCBC's members are small and medium-sized enterprises (SMEs). The CCBC's mandate is to stimulate and support trade in goods and services, investment and technology transfer; to achieve greater economic growth and closer relationships between Canada and China; to provide practical and focussed assistance to business; and to be the voice of the Canadian business community on matters of Canada-China relations, both to the Canadian government and to the public at large.

Small and medium-sized companies unable to maintain a full-time presence in China may find the CCBC's range of services particularly useful. CCBC member services include the provision of market research; policy support; counselling; translation services; negotiating strategies; and arranging business programs.

### *Canadian International Development Agency – Industrial Cooperation Program*

Since 1982, CIDA's Industrial Cooperation Program (CIDA-INC) has been actively promoting Canadian participation in China's socio-economic development. CIDA-INC offers cost-sharing services for feasibility studies, project development and project implementation to companies considering investing in China through joint venture arrangements or wholly-owned ventures. CIDA-INC's interests are mostly in projects involving social impact enhancement. For more information, visit http://www.acdi-cida.gc.ca/busine-e.htm or contact a CIDA-INC program or contracting manager.

### *Export Development Corporation*

Export Development Corporation (EDC) is Canada's official export credit agency facilitating Canadian trade with over 200 world markets. EDC's first transaction with China took place in 1980 and since then EDC customers — Canadian companies of all sizes — have concluded over $5 billion of business in China. A variety of EDC trade finance services have been employed in the Chinese market. Financing is traditionally offered on a case-by-case basis through lines of credit established with select Chinese banks. Export financing may also be considered via direct buyer loans to credit worthy companies which have Chinese government authority to borrow funds abroad. In addition, EDC export and investment insurance programs provide exporters with protection against a variety of commercial and political risks. Performance security and contract bonding programs also help exporters by providing them with the ability to free up working capital while meeting bonding requirements during the execution of commercial contracts.

### *Foreign Investment Protection Agreement*

Negotiations are under way between Canada and China to conclude a foreign investment protection agreement (FIPA). However, China's WTO accession is a pre-requisite to its completion. Canada is actively working with the Chinese government to remove as many investment barriers and restrictions as possible.

### *Program for Export Market Development*

The Program for Export Market Development (PEMD) helps Canadian companies enter new markets by sharing the costs of activities that companies normally could not or would not undertake alone, thereby reducing risks involved in entering a foreign market. Eligible costs and activities include market visits, trade fairs, incoming buyers, product testing for market certification, legal fees for international marketing agreements, transportation costs of offshore company trainees, product demonstration costs, promotional materials, and other costs necessary to execute a market development plan. Activity costs are shared on a pre-approved, 50/50 basis.

The PEMD refundable contribution ranges from $5,000 to a maximum of $50,000. Preference is given to companies with fewer than 100 employees for a firm in the manufacturing sector and 50 in the service industry, or with annual sales between $250,000 and $10 million. Other components of the program include international bid preparation (Capital Project Bidding) and, for trade associations, developing international marketing activities for their membership. For additional information visit http://www.infoexport.gc.ca/pemd-e.asp or call 1-888-811-1119.

### *WIN Exports*

WIN Exports, a database of Canadian exporters and their capabilities, is used by trade commissioners around the world and by Team Canada Inc partners in Canada to match Canadian suppliers with foreign business leads, and to share information on trade events. To register your company in WIN Exports or for more information, visit http://www.infoexport.gc.ca/winexports/menu-e.asp or call 1-888-811-1119.

## PUBLIC-SECTOR CUSTOMERS

The main customers of mining equipment are coal and nonferrous and precious metals mines. Increasingly, these mines are managed locally or provincially and act much like private companies.

Only a few of the largest mining enterprises are authorized to buy equipment directly from foreign companies. Most Chinese mining enterprises must ask a government

import/export corporation to import mining equipment on their behalf. Some of China's largest import/export corporations dealing with mining equipment include:

- the China Coal Mine Equipment & Mineral Import & Export Corp. — procures between $45 and $90 million of equipment per year;
- the China National Nonferrous Metals Industry Trading Group Corp. (Equipment Technology Dept.) — imported nearly $30 million worth of mining equipment in 1998;
- the China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters — has 2000 members in China; and
- the China MinMetals Group — a giant multi-business enterprise group focussed on international trade of mineral commodities and construction materials.

**Government Organizations**

Since 1998, major changes have been implemented to the structure and mandate of the agencies, departments, and enterprises governing mineral policy and operations in China. These changes are still underway.

Indeed, the Chinese government announced in October 2000 that it will disband the ten industry administrations which it created and placed under the control of the State Economic and Trade Commission (SETC) in 1998, by the end of 2000. The industry administrations relating to the mining industry which have been, or will be disbanded, include the State Metallurgical Industry Administration, the State Nonferrous Metals Industry Administration (SNMIA), the State Coal Industry Administration, the Gold Bureau, and the State Bureau of Petroleum and Chemical Industries.

Following the dissolution of the industry administrations, the Government is expected to establish industrial associations. These associations are expected to become one of the primary conduits for foreign enterprises to become involved in China.

It is still not clear what roles the Ministry of Foreign and Economic Cooperation (MOFTEC), MinMetals (China's largest trading corporation), the new mining-related industrial associations and the provinces will play, especially for the issuance of export licenses.

At this time, the government organizations involved in China's mining sector include the following.

### *China National Aluminium Corp. (ALCOC)*

ALCOC was established last September. Under the direct supervision of the State Council, the corporation controls six of China's largest alumina producers and four of its largest aluminium smelters. Members of this group include Pingguo Aluminum Co., Guizhou Aluminium Plant, Qinghai Aluminium Plant and aluminum producers from Henan, Shandong, and Shanxi provinces.

### *China National Metals & Minerals Import & Export Corp. (China MinMetals Group)*

MinMetals is one of China's 39 key state-owned enterprises and is the nation's largest foreign trade enterprise. Traditionally, MinMetals has been involved in the import and export of commodities such as iron and steel, nonferrous metals, and non-metallic construction materials and minerals. MinMetals has also become involved in the financial, transport, property development and management, industrial production and the engineering contracting and labour service sectors. At present, China MinMetals has 44 overseas subsidiaries in 22 countries and 98 solely or jointly funded domestic enterprises in 13 provinces and autonomous regions.

MinMetals is expected to play a more active role in the mining sector. It will likely handle most of the nonferrous metals sector's trade. In particular, it is thought that MinMetals will be responsible for the trade of tin, tungsten, antimony, rare earths, silver and zinc.

### *China National Gold Corp. (CNGC)*

The China National Gold Corporation (CNGC) manages 27 of China's most important gold companies and is responsible for gold mining exploration. The CNGC helps mining gold enterprises to adhere to the regulations of the Gold Bureau, contributes to the decentralization process and encourages the creation of joint ventures. CNGC falls under the authority of the Gold Bureau.

According to Chinese government officials, the CNGC's functions will be transferred directly to the SETC while control of most of its companies will be transferred to the provincial level later this year.

### *China Nonferrous Metals Industry Association*

The newly established China Nonferrous Metals Industry Association will begin operating later this year. The federal association will cover all nonferrous metals and will embody the 20 nonferrous industry associations already in existence with the exception of the aluminium industry association. The association will be responsible for the: development of industry laws and policy; quality management; environmental protection; and managing the relationship between the central Government and local

authorities. The association will not manage any mines and will have no power to approve projects.

***The Gold Bureau***

The Gold Bureau acts as an agency of the SETC setting policy for China's gold industry. It establishes industry plans and regulations, technology policies, technical standards and determines the gold production plan. While most of China's 27 gold companies report to the CNGC, a few independent provincial gold administrations in less important gold-bearing provinces, report directly to the Gold Bureau. The Gold Bureau will be disbanded shortly.

***Ministry of Foreign Trade and Economic Cooperation (MOFTEC)***

The Ministry of Foreign Trade and Economic Co-operation (MOFTEC), under the State Council, is mandated with the overall administration of China's foreign trade and economic co-operation. Key responsibilities include:

- managing external economic relations and trade;
- implementing foreign trade policies;
- drafting medium- and long-term foreign trade development programs and annual import-export plans, in co-ordination with the SDPC;
- approving the establishment of import and export enterprises;
- implementing the import and export licensing system;
- drafting and producing joint-venture documents; and
- negotiating trade agreements.

***Ministry of Land and Resources***

The new Ministry of Land and Resources (MLR) is very influential in China's mineral sector. Reporting directly to the State Council, the MLR is the only government organization responsible for mining and minerals that has full ministry status. The MLR drafts and enforces laws and regulations concerned with managing land, mineral and ocean resources and issues mineral resource prospecting and mining permits.

In order to enable the state to direct China's mineral sector more effectively, the MLR is currently working on two reports (Mining Resources Strategy and Integrated Outline of

National Mineral Resources ) which will guide the exploration, development, utilization, protection and management of mineral resources in the future. The reports aim to:

- provide for a better balance between supply and demand in China; and
- enhance the sustainable and equitable development of resources.

***State Council***

The State Council represents the highest level of decision making in the Chinese government, providing overall direction to China's economic policy development. Composed of China's premier, four vice premiers and five state councillors, the State Council is in charge of approving any project valued at US$100 million (C$149 million) or more, or having any aspect considered to be sensitive.

***State Development Planning Commission***

The State Development Planning Commission (SDPC) is a macroeconomic central agency responsible for the development of strategy and plans for national economic and social development. The SDPC has a critical role in planning central government expenditures, and reviews and approves large foreign investment projects of between US$30 million (C$44 million) and US$100 million.

Following SDPC approval, projects are put on a comprehensive list of SDPC projects at which point the Ministry of Finance announces them to the public. The Ministry of finance will then negotiate all purchases.

***State Economic and Trade Commission***

Management of the entire mining industry now falls under the jurisdiction of the State Economic and Trade Commission (SETC). The SETC is mandated to review and approve the metal and mineral regulations and policies — such as industry plans, technology policies, industry regulations, technical standards and the production plans — drafted by the MLR.

The SETC, which is the result of the amalgamation of nine former ministries, agencies and bureaus, is a powerful organization falling directly under the control of China's State Council. A new Enterprise Management Department is expected to take over the functions of the ten SETC industry administrations which will be disbanded this year as discussed above.

### *State Non Ferrous Metals Industry Administration (SNMIA)*

SNMIA was one of the most important administrations established under the SETC two years ago. Its responsibilities will be transferred to MinMetals and to the SETC later this year.

### Government Procurement

Despite China's moves toward a market economy, there are currently few consistent, industry-wide, public- or private-sector business processes other than those associated with State-level development blueprints (e.g., the National People's Congress Five-Year-Plan and the roles of the SDPC and the SETC). The "business process" as practised is in fact, a reflection of many factors, including the number and levels of government involved, degrees of political support, international investment and "buy ins," directed contracts, "favoured contractors," and competitions held only to drive price down.

There is no guarantee that contracts (even those tendered internationally because they are funded by a multilateral development bank) will be awarded in accordance with the checks and balances usually built in to a Western form of competitive tendering process. Factors vary for each project to such an extent that, rather than there being a standard process each has a degree of uniqueness, an understanding of which is fundamental to involvement and eventual negotiation. With so many decisions made by different levels of government and financing often dependent on offshore investment, time-lines are often simply guidelines.

China's pending accession to the WTO is a demonstration of its commitment to a program of economic reform (see ***China's Accession to the World Trade Organization*** for more information on this subject). This commitment will result in adjustments to China's public and commercial sector business practices over both the short and long term. However, it is not anticipated that such adjustments will be immediately adopted and enforced.

Project tenders funded by multilateral/bilateral organizations are conducted under the rules of international competitive bidding. Tenders for projects funded by the Japan Bank for International Cooperation (Jabic — formerly known as the Overseas Economic Cooperation Fund, OECF) are announced in the Chinese press and are conducted, in most cases, by the China National Technical Import Corporation. Tenders for World Bank and Asian Development Bank funded projects are processed through international tendering companies such as, The China National Technical Import/Export Corp., China Commercial Import/Export Corp., China Chemical Construction Co., and the China International Tendering Co.

## MARKET LOGISTICS

### Channels of Distribution

Canadian companies are strongly encouraged to enlist the services of a local agent or distributor to facilitate market penetration. The Chinese will almost always contact foreign companies that have an office or representative in China, but will not necessarily contact others. Joint ventures with domestic firms, wholly owned foreign ventures, technology transfer arrangements, trading companies, and establishment of local sales offices are also options.

Canadian companies may contact the Canadian Embassy in Beijing or the Consulates General in Chongqing, Guangzhou, and Shanghai, for a list of reliable and authorized distributors and agents in their respective regions.

#### *Direct Sales*

Due to the centralized nature of the Chinese mining sector, distributors and agents are not customarily used for marketing mining equipment in the country. Canadian manufacturers are therefore advised to promote their products directly to end users.

#### *Joint Ventures*

The time frame for implementing a project, the constraints on imports and exports for required equipment or products, and the level of bureaucratic interference, can all be reduced by entering into joint ventures with provincial and/or national entities. This is particularly true in many autonomous regions, special economic zones, open coastal cities and special planning provinces. Guangdong and Hainan provinces have special privileges in dealing with foreign investors.

Wholly owned foreign enterprises (WOFE) have been given the right to operate in most sectors of China's mining industry. WOFEs are still not allowed to be involved in gold mining, copper processing, or the exploitation of tungsten; however, this ban may be relaxed soon. Due to their flexible nature, cooperative joint ventures (CJV) are the most popular vehicles for mining joint ventures in China.

Key issues in finding a joint venture partner include evaluation of the property and operations that belong to the partner; an acceptable equity ratio; and the amount of Chinese contribution (usually in the form of financial investments, labour, equipment, and/or rights to the land) to the joint venture.

## Market-entry Considerations

### *Suggested Business Practices*

One of the most important aspects of business dealings in China is *guanxi*, which translates roughly as "connections." The right *guanxi* can open doors to vast networks of potential clients and can facilitate understanding (and sometimes sidestepping) of China's diverse regulations and restrictions.

While a local agent or partner can attend to *guanxi* on the foreign partner's behalf, frequent visits to the market by the exporter — and/or establishment of a local office — is advisable for establishing successful, long-term business relationships in China.

Naturally, all training and usage documentation accompanying imported products must be provided in the customer's first language (Mandarin is most commonly spoken, although Cantonese is often the preferred language in some Southern Chinese areas). Written Chinese should be in simplified characters. Canadian companies visiting China should bring business cards that are in Chinese.

Canadian companies should adopt visible marketing and promotion materials in Chinese (e.g., brochures, advertisements in Chinese industry magazines), that let potential customers know who they are and how to find them. Vendor reliability, reputation and product history are vital in the purchasing decision.

Proper respect should be shown to potential clients or other business partners by addressing them by their honorific title (e.g., Mr., Dr.), and by being on time for all meetings. When exchanging business cards, adequate consideration should be given to the business card offered (reading the information thoroughly and commenting on the "high" position of the client or partner).

For more exhaustive treatments of suggested business practices in China please refer to **Appendix G** and to the Department of Foreign Affairs and International Trade's *SME Survival Guide to the China Market*, which is available at the following URL: http://www.infoexport.gc.ca/docs/view-e.asp?fn=76520&lg=0

### *Intellectual Property Rights Protection*

Canadian companies should be aware that although China has indicated a strong commitment to improving property rights protection, trademark infractions and theft of patented technology are still prevalent.

Patent application by foreign non-residents must be made to the State Intellectual Property Office of the People's Republic of China, or the Shanghai Intellectual Property

Administration. Applications and proceedings are published in the Patent Gazette 18 months after initial filing.

Trademarks are valid for 10 years from the approval date and can be renewed upon application. Foreigners must apply to the State Administration of Industry and Commerce for a trademark.

### *Import Regulations*

A number of significant systemic problems and practices impede Canadian access to the Chinese market.

A common problem faced by many Canadian firms that have entered the Chinese market is the lack of transparency and the inconsistent application of laws, regulations and import practices. These difficulties reflect, in part, the decentralized nature of administration in China and the strength of local centres of power. The administrative units of local and regional governments often act independently from central commands and from written laws endorsed by the central authorities. In customs procedures for example, it is not uncommon for one product to be subject to different levies in different ports, as each port authority adds its own administrative and miscellaneous fees to the basic import tariff. This practice makes for uncertainty in the calculation of export costs and impedes the establishment of consistent, long-term commercial ties. In the case of capital projects, the approval process is often unclear, as is who is the ultimate decision-making authority on any particular project.

High import tariffs are one of the principal impediments to Canadian exports. Canadian exporters are particularly vulnerable if their products compete against domestically produced goods or have a fixed world price. The fees and tariffs that apply to China on mining equipment vary, but are generally about 35% when the Import Duty Rate is added to the 17% Value-Added Tax (VAT). **Table 5** outlines specific import duties as they apply to certain mining equipment at this time.

**Table 5. Import Duties Levied Against Specific Mining Equipment in China***

| Mining Equipment | HS Tariff Code | Import Duty Rate (%) | VAT (%) | Total (%) |
|---|---|---|---|---|
| Mining drills | 84305031 | 15 | 17 | 34.55 |
| Other mining drills | 84305039 | 15 | 17 | 34.55 |
| Front end shovel loaders | 84295100 | 16 | 17 | 35.72 |
| Mine wagon pushers | 84285000 | 15 | 17 | 34.55 |
| Mine hoist | 84252019 | 16 | 17 | 35.72 |
| Pneumatic conveyors | 84282000 | 16 | 17 | 35.72 |
| Other mining equipment | | 12-18 | 17 | 31-38 |

*Note that tariffs are subject to change with short notice.

With China's accession to the WTO imminent, the general import duty rate which averages 16% is expected to be lowered gradually to 10% over a five-year period.

Canadian companies can often reduce the tariffs they face by exporting their products in a broken-down form, since the assembly of these components provides jobs to Chinese citizens. In addition, exporting products into China's five special economic zones, open cities and foreign trade zones can be advantageous, as these places may offer some form of preferential duty reduction or exemption. However, such special treatments tend to change fairly rapidly, so companies seeking to exploit opportunities should consult the relevant local authorities on a regular basis.

Other market access impediments to the Chinese mining sector include:

- investment barriers;
- the inability to appeal rulings by Chinese officials through a judicial review process;
- equivalent treatment of foreign and domestic firms (national treatment), and equivalent treatment of imports from different countries, e.g., most-favoured nation (MFN) status;
- access to foreign exchange — importers must apply for approval to get foreign exchange; and
- non-tariff barriers (such as import licences and quotas, and government subsidization of Chinese manufacturers).

The above issues are currently being addressed in multilateral and bilateral negotiations on China's accession to the WTO.

***Mining Project Development and Investment Process***

China's exploration and investment processes are subject to several stages of government approval. **Table 6** outlines when, and from which government body approvals need to be acquired.

## Table 6. Mining Project Development in China: Critical Path (Overview)

| EXPLORATION PROCESS | INVESTMENT PROCESS |
|---|---|
| **A. Preliminary Mining Process**<br>1. Identify possible project.<br>2. Verify data with the appropriate provincial geological bureau and work closely with local authorities.<br>3. Verify geological data on site (assess samples, have data validated by local Chinese or provincial Chinese authorities). | **A. Preliminary Investment Information**<br>1. Obtain approval for joint venture from MOFTEC. (All Chinese-foreign joint ventures must obtain such approval before any kind of operation can begin.) |
| **B. Pre-Feasibility Phase**<br>1. Obtain approval from MLR.<br>2. Begin preliminary exploration of projects deemed to have potential.<br>3. Begin procedures to find a joint venture partner (if this strategy is adopted instead of a wholly owned foreign enterprise — WOFE).<br>4.Obtain exploration permit from the federal or provincial Bureau of MLR, depending on the size of the project. (The permit gives the holder exploration rights for a specific area and a priority to a mining licence to mine a possible deposit.) | **B. Pre-Feasibility Phase**<br>1. Negotiate with Chinese authorities at different levels (SDPC, SETC, MLR) for approvals of technical studies, exploration plans, and pre-feasibility study. (By acquiring an exploration permit, the holder of the exploration rights has an obligation to make a minimum investment for the registered exploration each year.)<br>2. Submit project proposal to MOFTEC for approval. (This is done by the Chinese party of the JV.)<br>3. Obtain required business license from the provincial State Administration of Industry and Commerce (SAIC).<br>4. Obtain a project proposal approval document ("lixiang") from the SDPC or State Council (if the project is "important" or worth US$100 million or more). This document will be issued to the Chinese party. |
| **C. Feasibility Study Phase**<br>1. Obtain additional approvals from either MOFTEC or SDPC (depending on project size).<br>2. Request mining permit from MLR for exploitation and mining activities. (An annual fee must be paid per square kilometre of land allocated every year.) | **C. Feasibility Study Phase**<br>1. Obtain additional approvals from either MOFTEC or SDPC (depending on project size).<br>2. Request mining permit from MLR for exploitation and mining activities. (An annual fee must be paid per square kilometre of land allocated.) |
| **D. Development and Production Phase**<br>1. Build mine.<br>2. Undertake new negotiation process with MLR to discuss production levels, employment of Chinese workers, number of years of production, etc.<br>3. Obtain land use certificate from the local or provincial bureau of MLR (required in order to start operations.)<br>4. Begin production. | **D. Development and Production Phase**<br>1. Build mine (if required).<br>2. Obtain additional approval by the SDPC and/or State Council in order to start production.<br>3. Begin production. |

Source: Canadian Embassy in Beijing, October 1999.

### *Local Standards, Certificates or Registrations*

Canada is concerned that Chinese standards and, in particular, requirements for statutory inspection are creating impediments to Canadian companies trying to access China's mining sector. Canada is concerned that these requirements are not being imposed in the least trade-restrictive manner possible, as required by the WTO. Canada is attempting to obtain a transparent list of the standards being applied, and is working to identify and eliminate those standards that are merely qualitative in nature, that are disguised barriers to trade, or that are unnecessary impediments to imports.

### *China's Accession to the World Trade Organization*

China has made a number of trade-related commitments to World Trade Organization (WTO) members that are expected to take effect when China accedes to the organization. These include tariff concessions as well as commitments to apply WTO rules relating to: subsidies, standards, intellectual property, import licensing, trade-related investment measures and sanitary and phytosanitary measures. China will also be bound by fundamental WTO principles that will require the country to strengthen commercial legal procedures and improve transparency.

China's WTO commitments should help to reduce the risk of doing business in China and encourage increased trade and investment flows. However, most commitments will be phased in over time. In the case of lower tariff rates, most new bound rates will be phased in over five equal, annual increments from the date of accession.

China negotiated a number of tariff rate concessions in its bilateral WTO agreements with member countries. The most favourable concession for any item will apply to all member countries once China joins the WTO.

### *Financing*

Chinese mining enterprises typically do not have the funds necessary to purchase foreign mining equipment. Canadian companies that attach attractive financing packages to their bids will have a decided advantage over those companies that do not.

### *Investment Regulations*

There are a number of primary laws and regulations which relate to foreign investment in the Chinese metals and minerals sector. These include:

- general foreign investment laws and regulations on import and export duties and regulations on foreign exchange control;

- specific laws and regulations applicable to the minerals industry (e.g., the amended 1986 Mineral Resources Law of the PRC), regulations on mineral-titles management, regulations on mineral royalties and regulations on resource taxes;

- natural resource laws relating to the mineral industry, land management, regulations on the grant and transfer of land-use rights, forestry, environment protection and safety; and

- tax laws and regulations that are applicable to the minerals industry.

**Table 7** details the laws and regulations which apply specifically to the minerals industry.

**Table 7: Laws and Regulations Applying Specifically to China's Minerals Industry, 1999**

| Laws/regulations | Status |
|---|---|
| Mine Safety Law of the PRC | Effective May 1, 1993 |
| Regulations for Registering to Explore Mineral Resources using the Block System | Effective February 12,1998 (replaced Interim Measures on Registration of Exploration of Mineral Resources) |
| Regulations for Registering to Mine Mineral Resources and Regulations for Transferring Exploration and Mining Rights | Both effective February 12, 1998 |
| Interim Measures on Supervision and Management of Mineral Resources | Promulgated on April 29, 1987 (under revision) |
| Implementation Rules for the Mineral Resources Law of the PRC | Effective Jan. 30, 1992. Revised in 1999. |
| Regulations of the PRC on the Exploitation of Offshore Petroleum Resources in Cooperation with Foreign Enterprises | Effective Jan. 30, 1992, revised in 1999. |
| Regulations of the PRC on the Exploitation of Onshore Petroleum Resources in Cooperation with Foreign Enterprises | Effective Oct. 7, 1993, revised in 1999. |

Source: *Mining Engineering*, February 1999.

In addition to the laws and regulations listed in **Table 7**, six mining tax laws and regulations became effective in January 1994. These laws and regulations include: the enterprise income tax law; the individual income tax law (amended from the 1980 version of the law); regulations on a value added tax (VAT); regulations on a consumption tax; regulations on a business tax; and regulations on a resource tax.

### *Export Credit Risks, Restrictions on Letters of Credit or Currency Controls*

Commercial transactions involving foreign exchange must be approved by the State Administration of Exchange Control (SAEC). A letter of credit from the Bank of China usually indicates that the necessary approvals have been obtained. Most letters of credit provided by the Bank of China result in payments being made only after the export documents have been received — a waiting period of about two weeks. To protect themselves in the event that the terms of sale are not met, Chinese purchasers will often request a standby letter of credit from the exporter's bank at the time of the initial down payment.

Down payments for the purchase of large equipment and technology from foreign companies are normally between 15% and 25%. Up to another 75% is paid on delivery and the balance is paid on installation. Foreign companies doing business in China have found that both public- and private-sector customers are usually diligent with issuing payment on time and according to the specifications of the agreement. Short-term credits (30-90 days) are commonly provided.

China does not allow letters of credit issued by its banks to be confirmed by other banks of Chinese or foreign origin. However, as a member of the International Chamber of Commerce, China is required to comply with the Unified Customs and Practices code regarding international trade payments.

Chinese agents and distributors are generally well-versed in the use of letters of credit and other common export financing mechanisms.

## PROMOTIONAL EVENTS

| Event / Description | Organizer |
|---|---|
| **China Coal & Mining 2001**<br>International Technology Exchange and Equipment Exhibition on Coal and Mining<br>National Agricultural Exhibition Centre<br>October 9-12, 2001<br>Biennial exhibition showcasing mining technology and equipment, geological prospecting techniques and equipment, rescue equipment, coal preparation and utilization equipment, research equipment, and education/training. | **Together Expo Ltd.**<br>Unit A&B, 14th Fl, Guangdong Tours Centre<br>18 Pennington St.<br>Causeway Bay, HK-Hong Kong<br>Tel.: (852-2) 881-5889<br>Fax: (852-2) 890-2657<br>Contact: Carmen Yeung<br>E-mail: tgrexpo@netvigator.com<br><br>Note: For Canadian Companies interested in this show, contact the **Canadian Association of Equipment and Services for Export (CAMESE)** to join the Canadian pavilion.<br><br>**CAMESE**<br>Tel.: (905) 513-0046<br>Fax: (905) 513-1804<br>E-mail: minsupply@camese.org |
| **International Industrial Minerals Products and Equipment Trade Exhibition**<br>June 2001 (annual)<br>Beijing Exhibition Centre<br>Beijing, China | **China Beijing**<br>Zhong Jin Ming Cheng Exhibition Corp. Ltd.<br>No. 375 Yuegezhougn Fengtai District<br>Beijing 100071 China<br>Tel.: (86-10) 6381-4205<br>Fax: (86-10) 6381-4601 |
| **Annual Conference on Mining Laws and Investments in China**<br>October 2001<br>Annual conference providing a forum to discuss new policies, challenges facing foreign investors, and new strategies for mining exploration companies. | **Ministry of Land and Resources**<br>37, Guan Ying Yuan Xi Qu<br>Beijing 100035 China<br>Tel.: (86-10) 6612-7101<br>Fax: (86-10) 6612-7247<br>Internet: http://www.mlr.gov.cn |
| **The 8th International Metallurgical Industry Expo**<br>**The 3rd International Mining Equipment and Technology Exhibition**<br>May 14-17, 2002<br>Beijing International Exhibition Centre<br>Beijing, China<br>Annual show focussing on international mining equipment and technology and on the steel industry. | **Metallurgical Council of China Council for the Promotion of International Trade**<br>46 Dongsi Xidajie<br>Beijing 100711 China<br>Tel.: (86-10) 6522-0753<br>Fax: (86-10) 6523-3861<br>Contact: Zhang Lingyun<br>E-mail: mcexpo@metallurgy-china.com<br>Internet: http://www.metallurgy-china.com |

## KEY CONTACTS AND SUPPORT SERVICES

### Canadian Government Contacts

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Contact: Marc Parisien (Trade Commissioner) or Wang Li (Commercial Officer)
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*Canadian Consulate – Chongqing*
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Wu Yi Lu, Yu Zhong District
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*Consulate General of Canada – Guangzhou*
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**Canada Business Service Centres**
Toll Free: 1-888- 811-1119
Internet: http://www.cbsc.org

**Canadian Commercial Corporation (CCC)**
50 O'Connor St., Suite 1100
Ottawa, ON K1A 0S6
Tel.: 1-800-748-8191 or (613) 996-0034
Fax: (613) 995-2121
Internet: http://www.ccc.ca

**Export Development Corporation (EDC)**
151 O'Connor St.
Ottawa, ON K1A 1K3
Tel.: 1-800-850-9626 or (613) 598-2500
Fax: (613) 598-6697
Internet: http://www.edc.ca

**Natural Resources Canada**
580 Booth St.
Ottawa, ON K1A 0E4
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**Alliance of Manufacturers and Exporters of Canada, National Office**
5995 Avebury Road, Suite 900
Mississauga, ON L5R 3P9
Tel.: (905) 568-8300
Fax: (905) 568-8330
Internet: http://www.the-alliance.com

**Canada China Business Council (CCBC)**
*Head Office*
180 Dundas St. West, Suite 1502
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Tel.: (416) 954-3800
Fax: (416) 954-3806
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*Western Canada Office*
515 West Hastings St., Suite 2600
SFU at Harbour Centre
Vancouver, BC V6B 5K3
Tel.: (604) 291-5190
Fax: (604) 291-5039
E-mail: Alison_Winters@sfu.ca
Internet: http://www.ccbc.com

*Beijing Office*
CITIC Building
19 Jianguomenwai St., Suite 18-2
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*Shanghai Office*
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E-mail: ccbcsh@online.sh.cn
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**Canadian Association of Mining Equipment and Services for Export (CAMESE)**
345 Renfrew Dr., Suite101
Markam ON L3R 9S9
Tel.: (905) 513-0046
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**Canada Mining and Minerals Working Group in China**
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**Mining Association of Canada**
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**Northstar Trade Finance Inc.**
5811 Cooney Rd, Suite 205
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**Prospectors and Developers Association of Canada**
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**Machinery and Equipment Manufacturers' Association of Canada (MEMAC)**
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## International Institutions

**The World Bank Group and International Finance Corp.**
Mining Department
2121 Pennsylvania Avenue, NW, Room F8K-202
Washington, DC 20433, United States
Tel.: (202) 473-4241
Fax: (202) 522-0396
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E-Mail: pdesa@worldbank.org
Internet: http://www.worldbank.org

**The World Bank Resident Mission in China**
Building A, Fuhua Mansion, No. 8
Chaoyangmen Beidajie, Dongchen District
Beijing 100027 China
Tel.: (86-10) 6554-3361
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Internet: http://www.worldbank.org.cn

**Asian Development Bank Headquarters**
P.O. Box 789
0980 Manila, Philippines
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## Chinese Government Agencies

**China Council for the Promotion of International Trade (CCPIT)**
1 Fuxingmenwai St.
Beijing 100860, China
Tel.: (86-10) 6851-3344 ext. 8611
Fax: (86-10) 6851-7153
Contact: Ding Zhongze, Director of Liaison Department

**China National Industrial Machinery Import & Export Company (CMC)**
West-wing, Sichuan Plaza
No1. Fuchengmen wai St.
Beijing, China 100037
Tel.: (86-10) 6899-1155
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**China National Metals & Minerals Import & Export Corp. (Minmetals)**
Bldg 15, Block 4, Anhuli Chaoyo District
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**Chinese Embassy and Consulates General**
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**Metallurgical Council of the China Council for the Promotion of International Trade**
46 Dongsi Xidajie
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**Ministry of Foreign Trade and Economic Cooperation (MOFTEC)**
No. 2 Dong Chang'an Ave.
Beijing 100731 China
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**Ministry of Land and Resources (MLR)**
37, Guan Ying Yuan Xi Qu
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**Shanghai Intellectual Property Administration**
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**State Development Planning Commission**
38, Yuetan South St.
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**State Economic and Trade Commission**
No.26 West Xuanwumen St.
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**State Intellectual Property Office**
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**China Association for Science & Technology (CAST)**
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**China Society of Rare Earths**
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**China Non-ferrous Metal Industry's Foreign Engineering and Construction Co. Ltd. (CNFC)**
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### Useful Internet Sites

Department of Foreign Affairs and International Trade (DFAIT): **http://www.dfait-maeci.gc.ca**

ExportSource: **http://exportsource.gc.ca**

Industry Canada: **http://strategis.ic.gc.ca**

InfoExport: **http://www.infoexport.gc.ca**

Canadian Institute of Mining, Metallurgy and Petroleum: **http://www.cim.org**

China Coal Information Institute: **http://www.coalinfo.net.cn**

China Copper Web: **http://www.copperchina.com**

China Geological Survey: **http://www.cgs.gov.cn**

China National Non-ferrous Metals Industry Information Centre: **http://www.chinametal.cn.net**

INFOMINE: **http://www.infomine.com/**

Metallurgical Council of China, Council for the Promotion of International Trade:
**http://www.metallurgy-china.com/**

Ministry of Land and Resources: **http://www.mlr.gov.cn**

Ministry of Foreign Trade and Cooperation: **http://www.moftec.gov.cn**

The Mining Journal: **http://www.mining-journal.com/**

Natural Resources Canada: **http://www.nrcan.gc.ca/mms**

## APPENDIX A: China's Mining Industry, 1998 and 1999, Ore Output (million Tonnes)

| | 1999 | 1998 |
|---|---|---|
| Aluminum metal (primary) | 2.81 | 2.44 |
| Antimony (mine production, metal content) | 0.09 | 0.10 |
| Asbestos | 0.33 | |
| Coal-anthracite | 181.81 | 228.65 |
| Copper-mine production, metal content | 0.52 | 0.49 |
| - smelter production | 0.84 | 0.84 |
| - Refined | 1.17 | 1.21 |
| Gold (mine production, metal content) | 162500 Kg | 172485 kg |
| Graphite-natural | | |
| Iron Ore | 237.23 | 246.89 |
| Lead-mine production metal content | 0.55 | 0.58 |
| Limestone | | |
| Manganese ore | 3.19 | 5.28 |
| Mercury | 195000 Kg | 225000 kg |
| Molybdenum-metal content | 0.30 | 0.03 |
| Nickel-metal content | 0.05 | 0.05 |
| -Refined | 0.04 | 0.04 |
| Phosphate rock | 29.12 | 19.66 |
| Salt | 61.17 | 25.53 |
| Sulphur - native (S content) | 0.01 | |
| - pyrite (S content) | 7.45 | 3.65 |
| - by production, all sources (S content) | 0.01 | |
| Tin-metal content | 0.08 | 0.07 |
| Tungsten - W content | 0.20 | 0.02 |

Source: *Ministry of Land and Resources, Department of Mineral Reserves, October 2000* .

## APPENDIX B: Survey of China's Non-Ferrous Metals Industry

| | Unit* | 1980 | 1985 | 1990 | 1995 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|
| **Ten Non Ferrous Metals** | t x $10^4$ | 124.97 | 155.77 | 339.32 | 496.62 | 616.41 | 694.71 |
| Copper | t x $10^4$ | 38.36 | 41.25 | 56.16 | 107.97 | 121.13 | 117.42 |
| Aluminum | t x $10^4$ | 39.32 | 52.47 | 85.43 | 186.97 | 243.53 | 280.89 |
| Lead | t x $10^4$ | 17.72 | 22.25 | 29.65 | 60.79 | 75.69 | 91.84 |
| Zinc | t x $10^4$ | 22.74 | 30.62 | 55.18 | 107.67 | 148.63 | 170.32 |
| Nickel | t x $10^4$ | 1.14 | 2.27 | 2.75 | 3.89 | 4.01 | 4.44 |
| Tin | t x $10^4$ | 1.71 | 2.64 | 3.58 | 6.77 | 7.93 | 9.08 |
| Antimony | t x $10^4$ | 2.43 | 3.51 | 6.00 | 12.95 | 8.20 | 8.45 |
| Mercury | t | 894.00 | 1005.00 | 930.00 | 779.00 | 225.00 | 195.00 |
| Magnesium | t | 4527.00 | 2902.00 | 5352.00 | 9359300.00 | 70464.00 | 120734.00 |
| Titanium | t | 2286.00 | 1577.00 | 1913.00 | 1723.00 | 2246.00 | 1659.00 |
| **Metals Content in Concentrate** | | | | | | | |
| Copper | t x $10^4$ | 22.13 | 23.98 | 29.59 | 44.52 | 48.68 | 52.01 |
| Lead | t x $10^4$ | 17.54 | 23.05 | 36.39 | 51.98 | 58.05 | 54.89 |
| Zinc | t x $10^4$ | 27.57 | 39.50 | 70.31 | 101.07 | 127.32 | 147.6 |
| Nickel | t x $10^4$ | 1.25 | 2.72 | 3.32 | 4.18 | 4.87 | 4.95 |
| Tin | t x $10^4$ | 1.85 | 2.98 | 4.22 | 6.19 | 7.01 | 8.01 |
| Antimony | t x $10^4$ | 2.68 | 4.60 | 5.48 | 12.50 | 9.74 | 8.96 |
| Tungsten (convert into WO,65%) | t x $10^4$ | 4.56 | 4.83 | 6.28 | 5.33 | 4.63 | 3.92 |
| Converted by Moly concentrate conv. into Mo45% | t x $10^4$ | 0.99 | 2.02 | 3.29 | 7.33 | 6.67 | 6.61 |
| Cobalt | t | 427.00 | 283.00 | 249.00 | 981.00 | 39.00 | 249.00 |
| Bismuth | t | 531.00 | 417.00 | 1055.00 | 739.00 | 239.00 | 2682.00 |

| | Unit* | 1980 | 1985 | 1990 | 1995 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|
| **Half Product** | | | | | | | |
| Blister. Copper (Mine) | t x $10^4$ | 21.60 | 28.00 | 35.85 | 53.80 | 83.86 | 83.70 |
| Lead Bullion (Mine) | t x $10^4$ | 15.85 | 20.30 | 26.42 | 35.99 | 56.68 | 59.66 |
| $Al_2O_3$ | t x $10^4$ | 85.44 | 102.50 | 146.40 | 219.94 | 334.00 | 383.74 |
| Nickel Content in Nickel Matte | t x $10^4$ | - | - | 3.34 | 4.26 | 4.70 | 5.01 |
| **Nonferrous Metals Processing** | | | | | | | |
| Copper | t x $10^4$ | 22.85 | 38.37 | 45.18 | 157.19 | 125.20 | 128.19 |
| Aluminium | t x $10^4$ | 14.06 | 31.00 | 39.38 | 174.23 | 147.15 | 176.55 |
| Lead | t x $10^4$ | 0.68 | 0.99 | 0.70 | 3.70 | 0.43 | 0.28 |
| Zinc | t x $10^4$ | 4.45 | 4.98 | 4.34 | 12.54 | 1.84 | 2.39 |
| Nickel | t | 283.00 | 609.00 | 912.00 | 1008.00 | 187.00 | 448.00 |
| Tin | t | 475.00 | 596.00 | 556.00 | 5503.00 | 543.00 | 459.00 |
| Magnesium | t | 193.00 | 284.00 | 28.00 | 11773.00 | 7 00 | 24.00 |
| Cadmium | t | 14.00 | 15.00 | 7.00 | 17.00 | 0.00 | - |
| Double Metals | t | 5323.00 | 6018.00 | 11237.00 | 98385.00 | 2863.00 | 3032.00 |
| Copper Coil Belt | t | - | 20.70 | 15.06 | 29.26 | 28.01 | 29.17 |
| Aluminum Coil Belt | t | - | 2.77 | 2.26 | 4.10 | 6.23 | 7.62 |
| **Other Metals** | | | | | | | |
| Cadmium | t | 783.00 | 915.00 | 1129.00 | 1471.00 | 2125.00 | 2154.00 |
| Bismuth | t | 613.00 | 777.00 | 1058.00 | 803.00 | 818.00 | 855.00 |
| Cobalt | t | 223.00 | 282.00 | 325.00 | 238.00 | 409.00 | 303.00 |
| Silicon | t | 10430.00 | 30295.00 | 61200.00 | 67438.00 | 48252.00 | 46879.00 |
| **Auxiliary Material & Other** | | | | | | | |
| Carbon Paste (in CNNC) | t x $10^4$ | 19.35 | 23.70 | 42.80 | 65.16 | 68.79 | 73.97 |
| Flourate | t x $10^4$ | 4.99 | 4.50 | 6.05 | 9.38 | 7.51 | 9.04 |

| | Unit* | 1980 | 1985 | 1990 | 1995 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|
| Flotation Reagents | t x $10^4$ | 1.23 | 1.60 | 2.34 | 2.84 | 2.26 | 2.64 |
| Sulfur Concentrate | t x $10^4$ | 231.00 | 310.00 | 347.70 | 406.73 | 366.29 | 347.58 |
| Sulfur Acid (in CNNC) | t x $10^4$ | 105.00 | 141.70 | 189.20 | 240.35 | 450.94 | 465.20 |
| Copper Sulfate | t x $10^4$ | 1.45 | 0.92 | 1.07 | 1.07 | 0.99 | 1.05 |
| Zinc Sulfate | t x $10^4$ | 1.40 | 2.78 | 2.45 | 2.77 | 2.59 | 2.29 |
| Nickel Sulfate | t x $10^4$ | 0.14 | 0.06 | 0.17 | 0.49 | 0.16 | 0.17 |
| Generated Energy (in CNNC) | kwh x $10^8$ | - | - | 11.54 | 17.72 | 22.10 | 28.57 |
| Cement (in CNNC) | t x $10^4$ | 103.00 | 165.90 | 169.00 | 199.91 | 237.30 | 262.52 |
| **Capital Construction** | | | | | | | |
| Investment in Capital Construction in this year | Yuan X $10^8$ | 10.67 | 16.14 | 22.99 | 44.33 | 19.03 | 24.09 |
| Accumulative Investment in Capital Construction | Yuan X $10^8$ | 284.70 | 248.02 | 359.99 | 559.87 | 634.82 | 658.91 |
| **Investment in Renewal & Reformation** | | | | | | | |
| Investment in Renewal & Reformation This Year | Yuan X $10^8$ | 5.91 | 13.67 | 25.53 | 71.85 | 60.29 | 62.63 |
| Accumulative Investment in Renewal & Reformation | Yuan X $10^8$ | 43.75 | 84.95 | 204.55 | 464.21 | 674.58 | 747.21 |

* t = tonnes
Source: *2000 Yearbook of Nonferrous Metals Industry of China*

# APPENDIX C: China's Production of Non-ferrous Metals Mines in 1999

| Mineral | Total | Mining | | | | Stripping | | Drifting | | Other | Ore Output |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sum | Underg-round | Open pit | Placer among | Sum | Placer | T | m | | |
| Total | 203887283 | 92028419 | 44423390 | 47305029 | 1559367 | 96518470 | 469207 | 13846326 | 930670 | 1215503 | 95994904 |
| Copper | 115744963 | 42752212 | 16018638 | 26753684 | | 66786780 | | 5308756 | 521615 | 397205 | 48868476 |
| Aluminum | 15493726 | 4548636 | - | 4548635 | - | 10943091 | - | - | - | - | 3536862 |
| Lead & Zinc | 22966824 | 15469973 | 13779488 | 1660508 | 210992 | 3683117 | 459154 | 5548087 | 321857 | 294346 | 13298301 |
| Nickel | 4282734 | 3479167 | 3479167 | - | - | - | - | 804567 | 26519 | - | 3832138 |
| Tin | 10107361 | 5899826 | 4236859 | 1723068 | 1348375 | 1736212 | 10052 | 241994 | 127050 | 229 | 6516009 |
| Antimony | 1176657 | 910110 | 910110 | - | - | - | - | 266547 | 21729 | - | 790965 |
| Mercury | 73354 | 63143 | 63143 | - | - | - | - | 10211 | 1237 | - | 81107 |
| Tungsten | 3496829 | 2657226 | 2657226 | - | - | 1000 | - | 832328 | 70077 | 9275 | 3442699 |
| Molybdenum | 22214251 | 13037711 | 1824365 | 11213346- | - | 6910120 | - | 266420 | 19737 | - | 13009927 |
| Gold & Silver | 5435021 | 1817177 | 1296324 | 521853 | - | 3288989 | - | 323679 | 19800 | 5176 | 1946123 |
| Rare Metal | 991877 | 792173 | 23450 | 768722 | - | 40218 | - | 175010 | 570 | 1787 | 582553 |
| Misc. | 2262196 | 571966 | 136793 | 435213 | - | 1126943 | - | 57757 | 755 | 505550 | 299774 |

Source: *2000 Yearbook of Nonferrous Metals Industry of China*

## APPENDIX D: China's Import and Export of Non-Ferrous Metals, 1999

| | Export | | Import | |
|---|---|---|---|---|
| | Quantity (tonnes) | Value ($ x $10^4$) | Quantity (tonnes) | Value ($ x $10^4$) |
| Mine product (concentrate) | | 10154.24 | | 94915.61 |
| Copper | 54 | 1.57 | 1250148 | 70476.30 |
| Lead | 22906 | 425.19 | 169669 | 4444.07 |
| Zinc | 233150 | 4975.92 | 44003 | 1241.21 |
| Nickel | - | - | 79 | 1.46 |
| Tin | - | - | - | - |
| Antimony | 20 | 5.36 | 144 | 7.06 |
| Tungsten | 80 | 21.68 | - | - |
| Molybdenum | 1900 | 5916.34 | 15980 | 4651.67 |
| Titanium Concentrate | 12144 | 186.60 | 15540 | 209.99 |
| Tantalum-Niobium Concentrate | 129 | 59.09 | 4344 | 5031.68 |
| Zirconium Concentrate | 330 | 48.18 | 130688 | 7391.82 |
| Cobalt concentrate | - | - | 7573 | 1460.35 |
| Other | - | - | - | - |
| **Metallurgical Product** | | 352038.19 | | 324038.73 |
| **Ten Non-ferrous Metals** | 1598768 | 285864.46 | 1086978 | 225529.13 |
| Copper & Copper Alloy | 99814 | 23265.69 | 417727 | 98169.93 |
| Aluminum & Aluminum Alloy | 206602 | 40588.11 | 534004 | 100391.50 |
| Lead & Lead Alloy | 468368 | 36023.93 | 15774 | 979.86 |
| Zinc & Zinc Alloy | 527142 | 80086.69 | 107438 | 15990.65 |
| Nickel & Nickel Alloy | 14455 | 10265.71 | 4498 | 6013.56 |
| Tin | 64583 | 46722.65 | 6788 | 2211.46 |
| Antimony | 84017 | 1377688.12 | 2580 | 815.98 |
| Mercury | - | - | - | - |
| Magnesium | 133464 | 3481125.84 | 309 | 102.14 |
| Titanium | 323 | 283.43 | 860 | 849.58 |
| **Half Product** | | 10358.40 | | 86013.07 |
| Blister Copper | 3495 | 909.92 | 129960 | 33170.85 |
| Alumina | 14406 | 778.31 | 1623186 | 50203.56 |
| Aluminum hydrate | 35235 | 1076.18 | 9605 | 624.89 |

| | Export | | Import | |
|---|---|---|---|---|
| Zinc Oxide | 68499 | 7591.38 | 10752 | 1684.92 |
| Nickel Oxide | 24 | 2.61 | 634 | 328.86 |
| **Rare Metals** | | 52010.78 | | 6603.07 |
| Tungsten & its products | 1629 | 3606.60 | 172 | 1643.99 |
| Tungsten Oxide | 9348 | 6684.25 | - | - |
| Tungstic acid | 1627 | 738.94 | - | 1.57 |
| Ammonium paratungstate | 10507 | 6563.85 | 5 | 4.15 |
| Molydenum Oxide | 7976 | 3770.13 | 166 | 119.64 |
| Ammonium molybdate | 1367 | 517.40 | 1 | 1.01 |
| Rare Earth Metals | 8293 | 9489.78 | 162 | 931.04 |
| Lithium compounds | 2796 | 1138.43 | 3725 | 963.48 |
| germanium | - | - | - | - |
| Others | 36676 | 13911.31 | 463 | 551.80 |
| **Other Metals in Common Use** | | 3804.55 | | 5893.46 |
| Cobalt and its products | 361 | 1447.13 | 1446 | 5514.70 |
| Bismuth | 2694 | 2354.24 | 95 | 37.72 |
| Cadmium | 12 | 3.18 | 870 | 341.04 |
| **Non-ferrous Metals Processing** | | 98415.09 | | 422274.09 |
| Copper Products | 97790 | 76481.82 | 631411 | 275617.42 |
| Aluminum Products | 94436 | 32157.13 | 426439 | 157154.39 |
| Lead Products | 1615 | 174.50 | 5730 | 551.40 |
| Zinc Products | 12525 | 2280.68 | 43418 | 7607.53 |
| Nickel processing products | 529 | 559.66 | 6876 | 8710.42 |
| Tin processing products | 9217 | 6420.27 | 14567 | 7130.26 |
| Magnesium processing products | 1922 | 552.29 | 213 | 253.55 |
| Titanium processing products | 1058 | 344229.26 | 1404 | 3484.86 |
| Rare Metals Products | | 6060.44 | | 1878.16 |
| Tungsten processing products | 317 | 401.48 | 139 | 82.87 |
| Molybdenum processing products | 965 | 1688.08 | 41 | 248.42 |
| Tantalum processing products | 75 | 3497.86 | 13 | 374.66 |
| Zirconium processing products | 32 | 473.02 | 81 | 429.35 |
| **Recovered Metals** | | 4643.56 | | 112946.66 |
| Copper | 11162 | 2364.16 | 1701391 | 70867.12 |

| | Export | | Import | |
|---|---|---|---|---|
| Aluminum | 6910 | 1040.45 | 599268 | 39929.30 |
| Lead | 1060 | 22.98 | - | - |
| Zinc | 5955 | 394.04 | 42127 | 2121.51 |
| Nickel | 861 | 443.79 | 138 | 20.47 |
| Tin | 20 | 0.33 | - | 0.03 |
| Magnesium | 1634 | 376.46 | 21 | 3.45 |
| Antimony | - | - | - | - |
| Titanium | 17 | 1.34 | 8 | 4.78 |

Source: *2000 Yearbook of Nonferrous Metals Industry of China*

## APPENDIX E: China's Imports of Mining Machinery and Equipment ($ millions)

| HS Code | Description | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| 730840 | Equipment for scaffolding, shuttering of iron ore | 14.14 | 12.74 | 10.72 | 6.32 |
| 820713 | Rock drilling/earth boring/working part of cermets | 1.45 | 0.97 | 2.89 | 0.20 |
| 820719 | Other rock drilling/earth boring tools including parts | 4.64 | 3.70 | 7.41 | 9.82 |
| 820750 | Tools for drilling, other than for rock drilling | 21.92 | 17.51 | 20.09 | 27.12 |
| 841710 | Furnaces/ovens for heat-treatment of ores/metals | 101.94 | 54.97 | 46.48 | 35.84 |
| 841780 | Other industrial or laboratory furnaces and ovens | 94.61 | 74.86 | 57.03 | 70.71 |
| 841939 | Other dryers | 165.60 | 124.82 | 78.14 | 118.92 |
| 841950 | Heat exchange units | 134.39 | 115.64 | 111.20 | 144.46 |
| 841990 | Parts of machinery, plant and equipment | 84.77 | 95.11 | 106.15 | 92.39 |
| 842119 | Other centrifuges, including centrifugal dryers | 88.91 | 62.33 | 64.36 | 80.47 |
| 842129 | Other machinery for filtering or purifying | 113.52 | 112.45 | 118.13 | 125.63 |
| 842420 | Spray guns and similar appliances | 6.90 | 7.70 | 6.85 | 10.81 |
| 842520 | Pit-head winding gear; winches for use underground | 5.54 | 1.09 | 29.83 | 3.98 |
| 842531 | Other winches/powered by electric motor | 18.57 | 14.61 | 11.67 | 33.05 |
| 842539 | Other winches; capstans | 6.94 | 2.51 | 3.44 | 8.24 |
| 842820 | Pneumatic elevators and conveyors | 20.64 | 19.03 | 8.64 | 13.25 |

| HS Code | Description | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| 842831 | Continuous-action elevators/conveyors for underground use | 3.20 | 4.39 | 0.97 | 31.35 |
| 842832 | Other continuous-action elevators/bucket type | 19.65 | 7.06 | 6.73 | 11.78 |
| 842833 | Other continuous-action elevators/conveyors/belt type | 175.66 | 111.68 | 114.47 | 96.63 |
| 842839 | Other continuous-action elevators/conveyors | 173.04 | 155.37 | 155.90 | 161.97 |
| 842850 | Mine wagon pushers, locomotive or wagon traversers | 1.84 | 1.22 | 2.37 | 0.29 |
| 842890 | Other machinery/lifting, handling, loading | 110.97 | 107.16 | 80.35 | 85.74 |
| 842919 | Other bulldozers and angledozers | 5.78 | 2.45 | 1.49 | 2.87 |
| 842930 | Scrapers | 10.31 | 3.78 | 1.71 | 2.21 |
| 842951 | Front-end shovel loaders | 27.57 | 10.52 | 9.88 | 16.75 |
| 842952 | Machinery with a 360 degree revolving superstructure | 170.61 | 146.25 | 127.02 | 118.92 |
| 842959 | Other mechanical shovels, excavators & shovel loaders | 60.95 | 52.94 | 26.74 | 42.05 |
| 843041 | Other boring or sinking machinery : self-propelled | 20.71 | 13.06 | 24.19 | 26.49 |
| 843049 | Other boring or sinking machinery | 3.53 | 4.30 | 2.94 | 2.51 |
| 843141 | Parts of buckets, shovels, grabs and grips | 1.48 | 3.58 | 1.72 | 4.38 |
| 846410 | Sawing machines | 32.83 | 16.70 | 14.94 | 25.77 |
| 846711 | Pneumatic tools/rotary type | 1.67 | 1.30 | 1.72 | 3.04 |
| 846719 | Other pneumatic tools | 5.09 | 4.18 | 4.36 | 6.47 |

| HS Code | Description | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| 846781 | Chain saws | 0.35 | 0.50 | 0.37 | 0.55 |
| 846789 | Other hand tools | 3.31 | 3.26 | 4.28 | 4.85 |
| 846792 | Parts of pneumatic tools | 3.22 | 2.29 | 2.50 | 6.33 |
| 846810 | Hand-held blow pipes | 0.87 | 0.66 | 0.68 | 0.74 |
| 846820 | Other gas-operated machinery and apparatus | 22.12 | 12.74 | 23.44 | 15.44 |
| 847410 | Sorting, screening, separating or washing machines | 33.95 | 46.34 | 32.58 | 41.48 |
| 847420 | Crushing or grinding machines | 108.43 | 66.34 | 62.24 | 87.82 |
| 847432 | Machines for mixing mineral substances with bitumen | 41.05 | 13.16 | 42.79 | 84.05 |
| 847480 | Other machinery for sorting, screening earth, stone | 322.50 | 141.09 | 107.77 | 202.37 |
| 847490 | Parts of machinery for sorting/screening/earth/stone | 102.40 | 72.28 | 64.17 | 59.62 |
| 847982 | Mixing/kneading/crushing/grinding/screening machines | 187.30 | 133.21 | 103.03 | 125.93 |
| 901540 | Photogrammetrical surveying instruments & appliances | 0.83 | 2.27 | 4.61 | 2.52 |
| 901580 | Other instruments and appliances for surveying | 54.77 | 103.62 | 88.24 | 130.37 |
| 901590 | Parts and accessories of geophysical instruments | 12.56 | 31.69 | 54.79 | 40.51 |
| 902410 | Machines and appliances for testing metals | 32.85 | 40.44 | 22.14 | 33.24 |
| **Total** | | **2 635.88** | **2 042.47** | **1 873.63** | **2 250.18** |

Source: TradStat, September 2000.

## APPENDIX F: Canadian Exports of Mining Machinery and Equipment to China, 1996 to 1999 ($ '100,000)

| HS Code | Description | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| 730840 | Equipment for scaffolding, shuttering of iron ore | 0.11 | 3.24 | 0.00 | 1.50 |
| 820713 | Rock drilling/earth boring/working part of cermets | 1.54 | 0.00 | 7.42 | 0.02 |
| 820719 | Other rock drilling/earth boring tools including parts | 4.31 | 0.57 | 0.00 | 2.33 |
| 820750 | Tools for drilling, other than for rock drilling | 0.04 | 0.15 | 0.11 | 0.07 |
| 841710 | Furnaces/ovens for heat-treatment of ores/metals | 0.35 | 6.48 | 0.00 | 0.00 |
| 841780 | Other industrial or laboratory furnaces and ovens | 0.27 | 1.29 | 3.99 | 0.30 |
| 841939 | Other dryers | 8.98 | 8.90 | 26.79 | 2.18 |
| 841950 | Heat exchange units | 6.75 | 3.60 | 3.94 | 5.25 |
| 841990 | Parts of machinery, plant and equipment | 2.30 | 0.55 | 11.14 | 0.17 |
| 842119 | Other centrifuges, including centrifugal dryers | 9.09 | 0.00 | 12.98 | 0.07 |
| 842129 | Other machinery for filtering or purifying | 1.67 | 19.64 | 1.34 | 11.43 |
| 842420 | Spray guns and similar appliances | 0.29 | 0.04 | 0.07 | 0.06 |
| 842520 | Pit-head winding gear; winches for use underground | 0.00 | 0.00 | 0.00 | 0.00 |
| 842531 | Other winches/powered by electric motor | 0.01 | 0.00 | 0.00 | 0.00 |
| 842539 | Other winches; capstans | 0.00 | 6.59 | 0.02 | 0.00 |
| 842820 | Pneumatic elevators and conveyors | 0.00 | 2.89 | 0.00 | 0.75 |
| 842831 | Continuous-action elevators/conveyors/underground use | 0.00 | 0.00 | 0.00 | 0.00 |

| HS Code | Description | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| 842832 | Other continuous-action elevators/bucket type | 0.05 | 0.00 | 9.48 | 0.00 |
| 842833 | Other continuous-action elevators/conveyors/belt type | 15.50 | 0.91 | 0.15 | 1.84 |
| 842839 | Other continuous-action elevators/conveyors | 0.51 | 9.60 | 9.20 | 2.71 |
| 842850 | Mine wagon pushers, locomotive or wagon traversers | 0.00 | 0.00 | 0.43 | 0.00 |
| 842890 | Other machinery/lifting, handling, loading | 11.77 | 32.16 | 28.54 | 13.52 |
| 842919 | Other bulldozers and angledozers | 0.00 | 1.38 | 0.00 | 0.00 |
| 842930 | Scrapers | 0.00 | 0.00 | 0.00 | 3.12 |
| 842951 | Front-end shovel loaders | 0.00 | 0.30 | 0.00 | 0.00 |
| 842952 | Machinery with a 360 degree revolving superstructure | 0.00 | 0.00 | 0.00 | 0.00 |
| 842959 | Other mechanical shovels, excavators & shovel loaders | 0.00 | 0.00 | 0.00 | 0.00 |
| 843041 | Other boring or sinking machinery : self-propelled | 8.48 | 0.62 | 25.39 | 33.45 |
| 843049 | Other boring or sinking machinery | 0.00 | 0.00 | 3.66 | 0.00 |
| 843141 | Parts of buckets, shovels, grabs and grips | 0.00 | 0.00 | 0.00 | 0.00 |
| 846410 | Sawing machines | 0.38 | 0.04 | 0.00 | 0.00 |
| 846711 | Pneumatic tools/rotary type | 0.21 | 0.00 | 0.00 | 0.14 |
| 846719 | Other pneumatic tools | 0.06 | 0.00 | 0.00 | 0.13 |
| 846781 | Chain saws | 0.50 | 0.00 | 0.00 | 0.00 |
| 846789 | Other tools for working in the hand | 0.30 | 0.00 | 1.81 | 0.09 |
| 846792 | Parts of pneumatic tools | 0.28 | 0.00 | 0.00 | 0.00 |
| 846810 | Hand-held blow pipes | 0.00 | 0.00 | 0.00 | 0.00 |

| HS Code | Description | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|
| 846820 | Other gas-operated machinery and apparatus | 0.04 | 0.02 | 0.00 | 0.00 |
| 847410 | Sorting, screening, separating or washing machines | 0.00 | 0.64 | 0.00 | 3.39 |
| 847420 | Crushing or grinding machines | 6.25 | 0.00 | 5.12 | 0.11 |
| 847432 | Machines for mixing mineral substances with bitumen | 0.00 | 0.12 | 0.00 | 0.00 |
| 847480 | Other machinery for sorting, screening earth, stone | 9.03 | 0.04 | 0.03 | 1.56 |
| 847490 | Parts of machinery for sorting/screening/earth/stone | 11.90 | 0.31 | 0.42 | 1.03 |
| 847982 | Mixing/kneading/crushing/grinding/screening machines | 4.31 | 2.85 | 2.03 | 2.84 |
| 901540 | Photogrammetrical surveying instruments & appliances | 0.00 | 0.00 | 0.00 | 0.00 |
| 901580 | Other instruments and appliances for surveying | 4.98 | 55.63 | 11.93 | 13.65 |
| 901590 | Parts and accessories of geophysical instruments | 0.17 | 0.44 | 1.60 | 2.07 |
| 902410 | Machines and appliances for testing metals | 0.00 | 1.48 | 1.23 | 0.02 |
| **Total** | | **110.43** | **160.48** | **168.82** | **103.80** |

Source: TradStat, September 2000.

## APPENDIX G: Business Do's and Don'ts

**DO:**

- familiarize yourself with China's culture, politics, business and social practices;
- understand that respect — amply seasoned with a knowledge and understanding of the Chinese culture — will be a critical building block in the foundation of a commercial relationship;
- understand the full meaning of *guanxi*, as well as the Chinese philosophy of "friendship first, business second";
- enlist the assistance of the Government of Canada through its various departments, offices, Consulates General and the Canadian Embassy in Beijing;
- take advantage of Government-supported trade initiatives, e.g. Team Canada visits;
- become familiar with Canadian public policies and public- and private-sector initiatives designed to provide a competitive advantage to Canadian companies;
- be aware, if your company is an SME, that market access will likely occur more quickly if you are part of a consortium;
- note the advantages inherent in offering attractive financing options;
- become familiar with the advantages/disadvantages afforded by joint ventures with Chinese companies. Wholly owned foreign companies, technology transfer arrangements, trading companies and establishment of local sales offices are also options that require examination;
- recognize the value of early and frequent visits to project sites to meet key contacts and maintain relationships;
- adopt visible marketing and promotion tools — in Chinese — that inform potential customers of who you are, what you do and how to contact you;
- be aware that thoughtful, targeted marketing can result in your product becoming the "preferred" one;
- note that for most large procurements, pre-qualification of your product will likely be necessary;
- be aware of the increased (spin-off) commercial opportunities that can develop as a result of establishing a presence in China, practising *guanxi*, and expanding your circle of business associates;
- have your agent or advisor research relevant aspects of opportunities and establish contact with key officials at the project management as well as municipal, provincial and central government levels;
- allow your agent or advisor to advise you on, and facilitate, meetings and subsequent negotiations;

- instruct your agent or advisor to keep you apprised of the trading practices in China of other foreign exporters; and

- recognize that major contracts are often lost over minor misunderstandings. Rely on your agent's or advisor's knowledge and never "infer" or "assume" what terms mean or what type of response is required to a communication.

**Do Not:**

- visit China on a speculative, unassisted basis;

- compete with low-tech domestic manufacturers; and

- assume that corrupt officials control regional markets because new laws are not being policed. New laws are not implemented overnight but the changes *are* being made!

## READER EVALUATION

Please help the Market Research Centre to produce market reports that meet your information needs by completing this evaluation form and returning it by fax to (613) 943-1103. Thank you for your valuable input.

1. How did you obtain a copy of this market report?
   - ☐ InfoCentre FaxLink system
   - ☐ InfoCentre help line
   - ☐ Local government office
   - ☐ Government Internet site
   - ☐ Other: _____

2. How would you describe this market report?

| | Strongly agree | Agree | No opinion | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| Useful | ☐ | ☐ | ☐ | ☐ | ☐ |
| Complete | ☐ | ☐ | ☐ | ☐ | ☐ |
| Well organized | ☐ | ☐ | ☐ | ☐ | ☐ |
| Well written | ☐ | ☐ | ☐ | ☐ | ☐ |
| Ideal length | ☐ | ☐ | ☐ | ☐ | ☐ |

3. In what form do you prefer to obtain these reports?
   - ☐ Print
   - ☐ Electronic

4. Based on the information in this report, what specific action(s) does your organization plan to take in this market? Check all that apply.
   - ☐ Seek an agent/distributor
   - ☐ Visit the market
   - ☐ Do more research
   - ☐ Other: _____
   - ☐ Contact Canadian trade office abroad
   - ☐ Participate in a trade show abroad
   - ☐ Nothing

5. What other market reports would be of benefit to your organization? Please identify specific products and countries. _____

6. Which of the following categories best describes your organization? Check one only.
   - ☐ Processor/manufacturer
   - ☐ Trading house
   - ☐ Export service provider
   - ☐ Industry/trade association
   - ☐ Government
   - ☐ Student/academia
   - ☐ Consultant
   - ☐ Other: _____

7. What were your organization's total sales last year, in Canadian dollars?
   - ☐ Less than $10 million
   - ☐ More than $50 million
   - ☐ $10 million to $50 million
   - ☐ Not applicable

Additional comments/suggestions for improvement: _____

OPTIONAL — The name of your organization is: _____